The Journal

OF THE

Jamaica Agricultural Society.

The more people do the more they can do; he who does nothing renders himself incapable of doing anything; while we are executing one work we are preparing ourselves for undertaking another.

VOL. XXI. JULY, 1917. No. 7.

BOARD OF MANAGEMENT.

The usual monthly meeting of the Board of Management of the Jamaica Agricultural Society was held at the Office of the Society, 11 North Parade on Thursday, the 21st June, at 11.30 a.m. Present: His Excellency Sir W. H. Manning, K.C.M.G., C.B.; Sir. John Pringle, K.C.M.G.; Hons. P. C. Cork, C.M.G.; D. Campbell, R. P. Simmonds and S. S. Stedman; Messrs. R. Craig, A. W. Douet, A. W. Farquharson, H. Q. Levy, A. C. L. Martin, Adam Roxburgh, Conrad Watson, Rev. W. T. Graham, and the Secretary, Jno. Barclay.

Apologies for Absence.—An apology for absence was received from Mr. James Dougall.

Confirmation of Minutes.—The Minutes of the previous meeting being printed and circulated were taken as read.

Mr. Craig remarked on the lengthy discussion on Praedial Larceny which appeared in the Minutes. He understood that it was long since decided that it was unnecessary to record the remarks of members in the body of the Minutes. If they were of particular interest they might be published in the JOURNAL after the Minutes. It was agreed that only necessary records be included in the Minutes.

Mr. Simmonds said that his statements about land for tenants were wrongly recorded, and he would like the paragraph altered in the Minutes. What he did say was that he already had 250 acres taken up.

The Minutes were then confirmed.

Statement of Accounts.—The usual monthly Statement of Accounts was presented. The Secretary reported that he had had to ask for an advance of £200 on account of the second Instalment of the Government Grant due 1st July.

Matters arising out of the previous Minutes:—The following matters were considered as arising out of the previous Minutes:—

(*a*) *Physical Unfitness of Labourers.*—The Secretary said that as instructed, he had written the Government on the matter of the Rockefeller Institute and he read their reply No. 8106-9415 dated 5th June, 1917, to the effect that a copy of a letter sent to Dr. H. H. Howard, Director for the West Indies of the Rockefeller Foundation, was enclosed, and that there will probably be further information available before the next meeting of the Board which he may be able to lay before the Board.

ENCLOSURE.

From the Acting Colonial Secretary, Kingston, to Dr. H. H. Howard, Washington.
Colonial Secretary's Office,
No. 7742/9593. Jamaica, 28th May, 1917.

Sir,

With reference to my letter, No. 8582/7311 of the 6th July, 1915, on the subject of the treatment of Hookworm in Jamaica, I am now directed by the Governor to say that he will be glad if you will be so good as to state for His Excellency's information, roughly, what *would be required for the establishment of a Commission to* deal with the matter if the Rockefeller Institute were asked and were willing now to undertake to send such a Commission to the Island—that is to say:—

(a) What would be the number of members of the Staff the Institute would send to the Island;

(b) What Staff would the Colony be required to provide, such as Doctors Microscopists, Dispensers, et al;

(c) What would be required in the way of building fixed or moveable and various requisites, Clerks, Nurses, et al;

(d) Would the field Laboratory be a moveable wooden structure or a tent, or would a room in a neighbouring house be suitable.

(e) What supplies, such as drugs, dressings, etc., would be required, and would these have to be provided by the Colony.

(f) What approximately would be the cost of a Campaign taking the population of the Island to be 900,000 inhabitants:—

For Staff.

For Buildings and requisites.

For Drugs, Dressings, etc. (per 100 or 1000 patients); and what proportion of the amount it is likely that the Commission would bear.

(g) How long would it take the Commission to work through the Island..

(h) Is the present time considered opportune for such a Commission to be sent to Jamaica in view of the declaration of War by the United States of America, and if so would Thymol be obtainable in sufficient quantities and at what price?

(i) Any other information that you may be able to furnish that would be of use in considering the question.

2. I am also to say that His Excellency would be glad to know in addition whether the Institute would be prepared to allow a separate Staff supplied by the Colonial Government to undertake concurrently with the work of the Commission a campaign against syphilis, Gonorrhoea, Yaws and possibly Pellagra, and whether the Institute would desire as His Excellency understands has been the case in other instances, that the Government should take over all matters connected with the sanitation of the Island while the Commission is conducting its campaign, that is to say, that all such matters should during that time, be taken out of the hands of the Parochial Boards and vested in the Government through the Central Board of Health.

I have, etc.,
(Sgd.) ROBT. JOHNSTONE,
Ag. Colonial Secretary.

H. H. Howard, Esq., M.D.,
Director for the West Indies,
Rockefeller Foundation, International Health Commission,
Washington, D.C., U.S.A.

Mr. Farquharson moved the following resolution:—

"That this Board is firmly convinced that the labour difficulties of the island are in a large measure due to the physical incapacity of the labouring population, which is mainly caused by hookworm, malaria, and other diseases which are widespread and preventable. They respectfully but earnestly recommend to the consideration of the Government, that it is of vital importance to the welfare of the island, that the earliest possible steps should be taken.

"(1) To induce the Rockefeller Foundation International Health Commission to inaugurate in Jamaica a campaign against hookworm similar to the campaigns conducted by the Commission in Antigua, British Guiana, Grenada, Dutch Guiana, St. Lucia, St. Vincent, Trinidad, Costa Rica, Guatemala, Nicaragua, Panama, Egypt and other countries.

(2) "To renew the active campaign against malaria, which was discontinued some years since."

[illegible]

Mr. Craig seconded and Messrs. Graham, Simmonds, Campbell ind Roxburgh supported the resolution.

Mr. Cork was against going abroad to ask for assistance in this onnection. He said treatment without sanitation to support it vould be of little avail and so long as the Parochial Boards were contituted as they were, the necessary sanitation would not be carried ut.

The President asked the reporters to withdraw He then spoke t some length in connection with the Resolution, and also upon ther matters, commenting upon the desirability of confining discusions to matters more closely allied with Agriculture, andthe functions f the Board of Management, at such meetings as he (the President) vas present at.

(*b*) *British Empire Producers' Organization.*—The Secretary eported that he had forwarded to the British Empire Producers Organization the subscription of £25, voted at the last Meeting of the Board, and a separate £5 subscribed by His Excellency as President f the Society to the funds of the Organization.

(*c*) *Office Equipment.*—The Secretary presented a report on the Office Equipment principally in connection with the storage of seeds, nd said as there was little time left he would circulate this to the nembers of the Board.

(*d*) *Neglected Juveniles.*—The Secretary said that the Comnittee appointed had met the previous afternoon to reconsider the uestion of Neglected Juveniles. The Committee would report later.

The President said this was a matter that he considered should ot be dealt with by the Society.

Mr. Roxburgh asked for the suspension of the standing orders hat he might be allowed to present a loaf of bread handed to him y Mr. Cradwick that morning made from sweet potato flour—viz: he dried chips pounded to flour, the proportion being 2 parts potato o one part wheat flour. The loaf was made by Mrs. Jefferson of ayle, and it seemed to him quite satisfactory. The samples were asted and found quite palatable.

The following letters from the C.S.O. were dealt with:—

(*a*) *Panama Disease.*—

(1) No. 8324-10603 dated the 7th June, 1917, saying that on ccount of an occurence of Panama Disease in St. Mary, His Excellency ad appointed certain gentlemen to be Inspectors of Plant Diseases nder Law 3 of 1915 for the area from the junction of Parochial Road No. 17 at Whitehall thence on to the Main Road leading from slington to Port Maria thence through the Parochial Road No. 28 o the Main Road at Robins Bay and on to the sea along the sea-shore o the Wag Water and up the River to the bridge across the Wag ater on the road from Port Maria to Annotto Bay thence along the gualta Vale Private road to the junction of the Main Road at Chovey, hence up the Hibbert Hill to the junction of the road through Clonmel

to Port Maria and on to the starting point at White Hall Parochial Road No. 17.

(2) No. 8595-10914 dated the 12th June, 1917.

"I am directed by the Governor to inform you that after consultation with Sir John Pringle and the Hon. R. P. Simmonds, arrangements have been made by the Director of Agriculture for the Microbiologist to lecture on "The Panama Disease of Bananas; its symptoms and field treatment", at the Court House, Port Maria, at 5 p.m. on Wednesday, the 27th instant, and at the Court House, Annotto Bay, at 5 p.m. on Thursday, the 28th Idem, and to request that you will be so good as to interest the local Branch Agricultural Societies in the lectures."

(Sgd.) G. M. WORTLEY,
Actg. Asst. Colonial Secretary

The Secretary said he had advised the Instructors and the Branches directly involved, of this arrangement.

Coconut Diseases.—(*b*) No. 8114-9965/17, dated the 5th June, 1917, covering copy of a letter from the Director of Agriculture submitting reports by Mr. H. G. Coote, Acting Inspector of Plant Diseases, on his work in treating Budrot and Leaf Bitten Diseases in St. Thomas.

Mr. Simmonds asked if there had been any report of disease at a certain property. The Secretary replied in the negative.

Mr. Martin said that cases had been reported to the Department in his locality, but that nothing had been done.

It was mentioned that there were only two Inspectors of Plant Diseases for the whole Island, and it might take many months before particular cases could be tackled.

The Secretary was directed to circulate the papers to the Board.

(*c*) *Use of Cornmeal.*—No. 8427-10178 dated 9th June, 1917, enclosing extract from letter from Professor W. H. Pickering suggesting that the peasantry be instructed in the use of cornmeal for food and that the American windmill be introduced here.

The Secretary said that corn was already a staple food of the peasantry in all its stages from the green ear to the dry corn which last was made into meal. Several styles of mill had been imported by the Society and tested, and as a result there were many Branches now using those recommended. The windmill was not generally suitable for Jamaica.

Arrangements for Half-Yearly General Meeting.—The Secretary said that the Half-Yearly General Meeting was due on the third Thursday in July—the 19th. The President said that there was to be a session of the Legislative Council beginning on the 10th July and he hardly thought it would be through by the 19th.

It was decided to hold the Half Yearly Meeting on the fourth Thursday, the 26th, at 11.40, the Board Meeting to be held on the day previous at 2 p.m.

Resignation of Mr. Woolliscroft.—A letter from Mr. Woolliscroft was read as follows:—

21st May, 1917.

Dear Sir,

On account of the fact that it is impossible for me to arrange to attend the meetings at all regularly from such a long distance, I feel that I should resign from the Board of Management. I much regret my inability to attend, but as I find I cannot do so without seriously interfering with my business, I shall be glad if you will kindly tender my resignation.

(Sgd.) WALTER WOOLLISCROFT.

Food Supply.—The Secretary presented a letter from the Food (War) Committee, London, on the question of food products from the West Indies for the United Kingdom, giving the results of the delibera-

tions of the Committee. This Committee thought that the fresh bananas could hardly be exported owing to the heavy tonnage space required. The Banana Fig requiring a special apparatus the supply could not be readily expanded. Banana chips seemed to offer the greatest attraction. With reference to sweet potatoes, the tonnage space again presented a difficulty, as also the fact that they do not keep very well. The two barrels shipped were reported as being satisfactory on arrival, but spoiled within two weeks of arrival.

The President said that there were large additional areas in the mother country planted to food crops and he thought that when these crops matured there would be a larger margin of home-grown food-stuffs, available there than hitherto.

Lands for Cultivation.—The Secretary reported that he had circularized the Branches on the question raised by the Minute from Mr. F. N. Isaacs, Secretary of the Board of Supervision, presented at the last meeting, and he now had reports from many of them. In the majority of cases there was no need for action as lands were available to tenants. But there were instances when there was a congestion and a lack of land for cultivation of food crops. The Staple and Minor Products Committee, to whom the matter had been referred, by the last meeting recommended that where these occurred the Government be asked to acquire land for rental to settlers in those localities.

The President said that in the regulations under the Defence of the Realm Law, which was published some time ago, the Governor had power to commandeer any land which he thought desirable, should be brought under cultivation. So far no action had been taken under the order, but it was quite open to parties concerned to make representations on the subject.

The President requested the Secretary to make an analysis of the reports and submit this to him.

Resolutions from Branches. (*a*) Agricultural Tools.—The Secretary presented resolutions from Branch Societies, calling attention to the high prices which they have now got to pay for agricultural tools, particularly cutlasses.

Mr. Martin stated that he understood that in some cases the dealers would not sell the purchaser a cutlass unless he bought something else.

The President said that that was also the case in England.

Mr. Roxburgh said he had had no difficulty in purchasing cutlasses at 2/- a piece.

The President said representations had been made to him on the subject, and the question was raised that the sale of cutlasses should be dealt with in the same manner as the food question. He had gone into the matter, and he had found that difficulty existed in receiving shipments of these tools. He thought the only solution of the difficulty would be for some sort of iron to be used in the manu-

Mr. Simmonds said this was already being done in St. Mary.

(*b*) *Praedial Larceny.*—The Secretary said he had also received a number of resolutions from Branch Societies on the question of praedial larceny, and the necessity for suppressing the evil.

Mr. Martin said the President had already outlined how he intended to deal with the evil.

The Secretary said he had simply brought the resolutions formally before the Board.

Authorized Persons.—Applications for appointments. -The following persons were nominated for appointment as Authorized Persons:

(1) William Ashley, Epsom, by E. E. C. Hossack, Annotto Bay

(2) David Forbes, Fort Stewart; George Smith, Agualta Vale John Harrison, Chovey; Claudeus Gooden, Annotto Bay, by K Mallet-Pringle, Annotto Bay.

Shows—Application for Grant.—The Hanover Branch submitted an application for a grant to their Show to be held on 1st August.

There was no money on the Estimates for grants to Shows, and the Secretary was instructed to advise the Hanover Branch to this effect.

War Gifts.—The Secretary reported that the direct boats which had been taking War Gifts in the past are not now sailing regularly, but that the Royal Mail Company had agreed to forward gifts by their cargo boat which sails about once a month. He said he would continue to get the gifts together and forward them by any opportunity that offered.

(*a*). *Instructors.* The usual monthly reports and itineraries of Instructors were submitted and referred to the Instructors' Committee.

(*b*). *Mr. Arnett's Resignation.* The Secretary reported that the Instructors' Committee had received a letter from Mr. Arnett resigning his position as Instructor for St. Ann. Mr. Arnett had been a very useful officer of the Society, and he had been forced to resign because he found that the constant travelling was too much of a tax upon him, and he could not keep it up. The Instructors' Committee had directed him to write to Mr. Arnett expressing their regret at receiving his resignation.

The Instructors' Committee decided to advertise for two young assistants who would be instructed under Mr. Cradwick, who would undertake the working of both St. Ann and St. Mary with one assistant in each parish as a tentative arrangement.

New Members.—The following new members were elected:—W. A. Baker (Acting Surveyor General) Kingston; W. J. Jack, Fiji Islands; C. K. Eaton, Llanrumney Estate, Port Maria; H. W. F. Robertson, Hartlands; William Ross, Blair Athol, St. Patrick's, Grenada; G. W.; Harris, c/o Manton and Hart, Kingston; J. Fisher, Atlantic Fruit Co. Port Antonio; M. B. Page and Co.,Florida, U.S.A.; J. Walker Thompson, Buff Bay; C. W. Newman, Half-way Tree.

SUGAR.

The following interesting matter is from an article in the *Penny Pictorial,* being one of a series entitled Our Wonderful Empire—its marvellous possibilities in sugar:—

The story of the sugar industry is a glaring example of how, through lack of foresight and sheer neglect in the past on the part of our statesmen, we allowed the production and manufacture of a very important and essential commodity to pass from our hands into those of the Germans.

We are short of sugar to-day for the simple reason that we foolishly allowed the Hun to obtain complete control of this valuable industry. Yet less than fifty years ago the British Empire controlled the world's supply of sugar. But gradually, by Government subsidies and other cunning methods, the Hun secured the monopoly and drove us from the market.

How dependent we were upon the Hun for this very necessary article of diet at the outbreak of the war is evidenced when we glance at the figures for 1913. In that year we imported into the United Kingdom no less than 1,969,259 tons of sugar. This was not a pound more than we needed. Of this huge quantity no fewer than 1,296,401 tons, or about two-thirds of the total quantity, came from Germany and Austria, and another 600,839 tons from other foreign countries. From our own Colonies we only obtained a paltry 72,019 tons. In other words, when war broke out we were dependent upon foreign sources for no less than 95 per cent. of our sugar.

When it is remembered that the finest purest, and sweetest sugar is that obtained from the sugar-cane, and that the richest sugar-cane-growing countries are found within the British Empire, and, what is equally important, the article can be manufactured from the cane as cheaply as from the beet or any other vegetable, it is clear that something is wrong; and it is sincerely to be hoped that the position will be altered, and altered speedily, for we can easily produce all the sugar we need within the Empire, and be independent of the Hun or anybody else.

To grasp fully how this undesirable state of affairs has been brought about it is necessary briefly to trace the history of this remarkable industry. A hundred years ago we were at war with Napoleon. We blockaded his ports, just as to-day we are blockading those of Germany. Consequently very little sugar reached the French, and in Paris it was so scarce that it sold at 12s. 6d. per pound, and was often unobtainable even at that price. At that period the whole of the world's supply of sugar was obtained from the cane, and it came entirely from British Colonies.

Deprived of sufficient sugar for his people, Napoleon looked round for a substitute, and appealed to his chemists. At that time certain German chemists had extracted sugar from the beet, though in very small quantities. But it was better than nothing; so factories were set up around Lille for extracting sugar from this vegetable. On the whole, the experiment proved a success, and, once started, Napoleon and his successors did their best to keep the industry going.

Later on, the Germans, by methodical research, went one better than the French, not only in improving the beet, but in introducing more up-to-date methods for crushing the vegetable and extracting its sweetening juice.

As soon as they found they could turn out an article virtually equal to that obtained from the cane, the Huns determined to obtain control of the industry, and went about it in a very deep and cunning way. They dumped sugar on the market here by the thousands of tons at less than cost price. Sugar which was sold to the people in Gemany, where it was made, at 3¾d. per pound, was placed on the British market at less than 2d. per pound. The German Government paid the difference to their merchants in bounties or special subsidies, with the sole view of securing the monopoly and ruining a prosperous British industry.

It meant, of course, that without some aid or protection the sugar planters in our Colonies could not meet this unfair competition, and thousands of them were ruined. A little foresight here, and the industry could have been saved. But our planters and our refineries, being left to shift for themselves, had no option but to retire from the market.

When it is remembered that the world needs something like twenty-million tons of sugar a year, and we alone, in normal times, spend between £25,000,000 and £30,000,000 annually upon this single commodity, it should have been clear to everyone that the Germans were playing for high stakes. Once having driven our planters from the field, the Hun took good care that the industry was never revived. Over and over again the proposal to revive the industry and grow our own sugar was mooted by far-seeing statesmen and others, but no official encouragement was given to the matter.

Very cunningly the Hun went ahead, quietly extending his markets right and left, and it is from their sugar that the Germans derived much of the wealth with which they are now making war. Even at the Sugar Conventions—over a hundred of which have been held, principally at Brussels, to thresh out the question of bounties and unfair tariffs—the Germans seem to have controlled the board by soft words and powerful influences, for they invariably ended by Great Britain agreeing not to give a preference to sugar produced within the Empire. As late even as June 12th, 1913, Sir Edward Grey promised the Germans not to give a preference to sugar produced within the British Empire without giving six months' notice.

Even India to-day is short of sugar because our own Government in the past were too shortsighted to see through the Huns' little game. Yet from time immemorial down to quite recent years India was the greatest sugar-producing country in the world. But, like us, this great Empire, where millions of acres were once under cane cultivation, and where labour is both cheap and plentiful, has had for many years past to depend upon beet-sugar from the Germans. It is gratifying to note that India means to alter all this, and in future produce her own sugar.

It is sincerely to be hoped, too, that our own Government will lose no time in taking the necessary steps to obtain all the sugar we need from our own Colonies. It would be a good thing for these dependencies. It would be a good thing for these dependencies, it would give employment of thousands of native labourers, to hundreds of planters and overseers, and to engineers and chemists. It would mean the starting of factories and refineries, and keeping the £30,000,000 a year which we spend upon this commodity within the Empire.

The West India Committee has shown how this can be done,

and its efforts in this direction are deserving of every encouragement. Soon after war broke out, when it realised how short we should be of sugar, and the golden opportunity afforded us of regaining our lost industry, it communicated with those tropical portions of the Empire where the cane is known to flourish and asked them what they could do. India was left entirely out of the question, for naturally she needs a huge quantity of sugar for her own people.

The result was most startling. Ten countries that were approached ed declared that they could so increase their crops as to be in a position to send us, not fewer than the two million tons which we took in 1913, but double this amount if we wanted it. The following table shows the present sugar crops of these countries—or, rather, the average for the three years ending 1913--together with their possible production.

	Present Sugar Crops. Tons.	Possible Sugar crop. Tons.
Barbados	35,000	51,000
British Guiana	105,000	2,500,000
Jamaica	15,000	35,000
Trinidad	50,000	87,000
Windward and Leeward Islands	26,000	67,000
Mauritius	244,000	305,000
Fiji	97,000	164,000
British East Africa	..	500,000
Queensland	217,000	500,000
Natal	91,000	331,000
	880,000	4,541,000

These returns were made by practical planters—men who know their business and what their plantations can produce. All they ask is that the Home Government accord them some form of protection against German dumping, a preferential tariff for a period of ten years. They on their part would then undertake to give us all the sugar we want, and, what is more, place it on the market so that everyone could buy a good quality of sugar at 3d. per pound, or even a little less.

NOTE.—As far as Jamaica is concerned the possible increase to 35,000 tons only represented increase present estates were capable of: it does not represent the possible increase of sugar production here if fresh lands were put under cane, and new factories started, which development awaited the assurance of the Imperial Government, that there would be an Imperial preference in trade. Our possible production then is in point of fact about 150,000 tons.—Ed.

:O:

RICE.

The Milling of Rice and its Mechanical and Chemical Effect upon the Grain

The following is an extract from an article in the Tropical Agriculturist (Ceylon) but quoted from a publication of the Department of Agriculture, U.S.A.:—

The rice grain from the farm is covered with a hard, siliceous hull. The hulled grain contains a germ, or embryo, located near one end, and is covered with a light-brown bran coat which, when examined

the process of milling, the hulls, the germ, six of the bran layers, and a portion of the seventh are removed.

A study of the evolution of rice milling in the United States shows that the farm method of pounding the grain in a wooden mortar with a pestle by hand was the earliest process. This was succeeded by milling plants employing mechanical power for operating the machinery. Mortars and pestles were enlarged, and screens, fans, polishing brushes, and hulling stones were introduced. In Louisiana small iron "plantation hullers" were used to scrape or scour off the hulls and the bran coats in a single operation.

With two or three exceptions, the 55 modern rice mills of the United States in operation in 1914 were located in Louisiana, Texas, and Arkansas. Various complex machines clean and scour the rice and prepare it for the market. Screens and fans remove the foreign material from the rough rice, which is then hulled between large revolving stones. Fans blow out the loose hulls and paddy machines separate the grain not hulled by the first treatment with the stones. Hullers, pearling cones, and brushes scour from the hulled grain the light-brown bran coat, which is separated in a powdery form through fine wire screens. In the trumbles the rice often receives a coating of glucose and talc approximating two-tenths of 1 per cent. of the former and one-tenth of 1 per cent. of the latter. The coating materials and the friction in the trumbles produces a bright luster. Grading the milled rice according to the size of particles is effected by shaker frames fitted with screens having perforations of various sizes; by reels, the sections of which are covered with wire of different sizes; and by cockle cylinders, which in revolving pick up the broken pieces in depressions in their inner surfaces and deposit them upon an inclosed apron suspended from the stationary axle. The various grades are bagged separately in pockets of 100 pounds each.

Excessive breakage occurs when rice of the Honduras type is milled in a "plantation huller," and the finished product may have less than 10 per cent. of whole grains.

The Honduras type of rice milled in a modern plant is broken to a considerable extent during the scouring process, which reduces its whole grain content from 75 per cent. as it leaves the paddy machine to 50 per cent. as it leaves the brush.

The Japan type of rice, on account if its shape, is broken to a less extent, and under similar conditions averages 92 per cent. and 80 per cent., respectively, of whole grains.

Approximately 10 per cent. of the weight of the rice kernels of both Honduras and Japan types is removed off by the scouring of bran coat and germ. In other words, the average weight per thousand kernels of rice of the Honduras type is reduced from 24.1 to 22.8 grams by the action of the hullers and pearling cone, and then to 22.1 grams by the brush. The hullers and pearling cone reduce the weight of the grain of Japan rice from 22.4 to 21.5, and the brush further reduces the weight to 20.2 grams.

Chemical analyses show that the old mortar and pestle mills removed a somewhat smaller proportion of ash, ether extract, and crude fibre from the grain than was the case with the "plantation huller" or than is done in the modern mill.

In the modern mill the brown rice from the paddy machine loses a considerable proportion of certain of its constituents in its passage

through the scouring machines. There is thus removed from the brown rice about 70 per cent. of its ash, 85 per cent. of its fat or oil, 70 per cent. of its crude fibre, 10 per cent. of its protein, and 30 per cent. of its pentosans.

The grading of milled rice is based largely on the percentage of whole grains or the size of particles. The four commercial grades of the Honduras type of rice generally made are (1) fancy head, or "head," (2) second head, (3) screenings, and (4) brewer's rice.

Other grades sometimes made an extra fancy head, or triple-screened, and line rice. The whole-grain content of the fancy head grade averages about 80 per cent. and its mill yield 59 pounds per barrel of rough rice. Second head, screenings, and brewer's rice are largely broken grains of different sizes, and their average yield is 19, 15, and 8 pounds, respectively.

Three commercial grades of the Japan type of rice are generally made. These are (1) fancy head, or "head," (2) screenings, and (3) brewer's rice, with mill yields approximately 96, 5, and 5 pounds per barrel, respectively. The fancy head grade averages 90 per cent. of whole grains; the other grades are similar to the corresponding separations produced from the Honduras type of rice.

The mill yield of rice hulls approximate 30 pounds, or rice bran, 20 pounds, and of rice polish 6 pounds per barrel of rough rice.

Chemical analyses of the several samples representing various commercial grades of rice show a slightly smaller percentage of ash, ether extract, and crude fibre in the higher than in the coresponding lower or more broken grades of both Honduras and Japan type rice. The percentage of protein in the milled Honduras type of rice appears to be somewhat higher than that in milled Japan rice.

Rice hulls contain but little ether extract or protein, but are very high in ash, crude fibre, and pentosans. Bran and polish are rich in fat and protein, and when fresh and not adulterated with hulls are considered an excellent stock food.

———:o:———

USEFUL EXPERIMENTS FOR SCHOOL GARDENS
(*continued.*)

Experiment 3.—Grow on the same bed two rows of corn, one from seeds taken from the middle of the cob, the other from seeds taken from the end.

Experiment 4.—Grow on the same bed a row of corn from selected seeds and another from seeds taken at random.

Experiment 5.—Rotate three beds of the same size with sweet potato , cowpeas and corn. Weigh and note results year by year.

Experiment 6.—In the permanent section plant out 3 cocoa or citron seedlings, one lower than the surrounding surface, the other to the level and the third a few inches above.

Experiment 7.—Plant a cocoa seed or seedling close to a banana and another not less than 6ft. from a banana.

Experiment 8.—Grow 3 coffee shrubs as nearly as possible under the same conditions with this exception, leave one to grow without any pruning, train and prune one as Long Top Coffee and train and prune the 3rd as Short Top Coffee. Gather the crops separately and note difference in quantity and quality.

PINEAPPLES.

VISIT OF THE ENTOMOLOGIST TO ABOVE ROCKS AND DISTRICT.

The following has been sent us by the Director of Agriculture:—

The Entomologist, at the request of Mr. A. P. Hanson, Agricultural Instructor, was in the field with him in the New River and Above Rocks section on Saturday, the 9th inst. The general problems of field crops were advised upon but rain greatly interfered with the day's proceedings. Opportunity was taken to examine pineapple fields in the pineapple weevil area.

Pineapple Weevil: Metamasius Ritchiei, Marshall.—The pineapple crop is just commencing to mature in the Above Rocks section but the prospects for growers owing to weevil are not by any means bright. The pest is again claiming a high percentage of the plants and fruits. In early August of 1916, recommendations for clearing out and slashing up of infested fruits and plants were made by the Entomologist, but it is much to be regretted that such recommendations, though extremely simple, have not been generally acted upon. In some instances, infested plants have been grubbed out and left in the fields in heaps! No purpose was served thereby as the immature stages would complete their life-cycle. Hillside pines were seen here and there which had lost foothold and were endeavouring to reach maturity in various contorted positions. Such weaklings, as was to be expected, were generally infested. Leaves from nearby trees, drifted into the hearts of the plants, were keeping the hearts in a damp condition. Mealy-bug was most prevalent round the base of the fruits and the inter-relation of weevil and mealy-bug is a point worthy of consideration As a whole the prospect was not pleasing and I would venture the opinion that more careful attention to the general culture and health of plants would undoubtedly improve matters considerably and is advisable, pest or no pest, and would be reflected in increased crop returns.

Hints as to Control:—The Pineapple Weevil is difficult to directly control once it has gained a footing as its life is passed in the seclusions of the fine tissues, and reliance must be placed upon preventive measures.

New pineries, if possible outside the present infested area or remote from existing pineries, should take the place of old, careful note being taken that the young slips obtained for the new plantings are sound; no burrowing passing from parent to slip (make a clean cut and see!), no jelly exuding from leaf bases of slips or jelly in the heart (beware of any hole on the slip from which, when pressed, jelly exudes!) The more progressive planters recognise this to be the best solution of their difficulty and some have already acted upon it.

A careful watch of the pines should subsequently be maintained and any showing "jelly-heart" of plant or infested fruit should be immediately forked out and chopped open to dry out: careful search having first been made deep around the leaf bases and in the jelly for any adult weevils which may be picked out and killed.

Such chopped open material will readily dry out and the contained grubs or "worms" will fail to find the succulent food necessary to carry them to a completion of their life-cycle and to enable them to change into the large Black Weevil—¾ to 1 inch in length—which flies off to lay the eggs to infest other plants and spread trouble abroad.

I would conclude: Clean up, or re-establish, and thereafter be careful of your culture! Abolish immediately anything suspicious in the pinery and let the examinations be systematic and keen!!

ARCHIBALD H. RITCHIE,
Government Entomologist,
20th June, 1917.

—:o:—

TREE PLANTING.

A tree planting campaign was commenced in the Port Royal Mountains some years ago, plants being supplied by Hope Gardens, the Agricultural Instructor for the district supervising distribution and planting. He had to report progress for the information of the Governor at intervals:—

I beg to report for the information of His Excellency the Governor the following, being half yearly report on Tree Planting.

The latest distribution which began last November, and continued at intervals till the 5th ult., included the following seedlings:—

Cedar, 1,000; Cocoa, 1,750; Sweet Orange, 1,350; Grapefruit, 2,000; Honduras Mahogany, 2,650.

The centres from which distribution was made were Dallas, Constitution Hill, Jack's Hill, Gordon Town, Mavis Bank and Stony Hill. Quite as much interest was displayed by recipients as on past occasions.

The plants were all of fine quality and practically all of the other varieties are alive, a small percentage of growth being applicable to the Honduras Mahogany only, not more than 30 of which have survived. This plant is delicate when young, and must be kept under observation, so that it be transported and planted at a time when the growing end is hardest. It promises to be a variety of mangificent and quickly growing timber, consequently it is advisable to continue trying with it.

The thousands of plants previously reported on are in a highly satisfactory condition. Hundreds have already attained the height of trees. Nothing could have been better pre-arranged than this planting of trees which have now taken the place of those recently cut down, and of others yet to be used up in consequence of prevailing high prices for imported lumber.

In connection with this effort, 4,100 cane tops were distributed when available. Tops cannot be had any price in some districts to-day, and this tells the value of these plants to those who received them; also the useful purpose yet to be served.

(Sgd.) A. P. HANSON,
Agricultural Instructor.

TICKS.

THE "CASH VALUE" OF DIPPING OR SPRAYING CATTLE TO FREE THEM FROM TICKS. IMPORTANT OFFICIAL EVIDENCE OF IMMENSE GAINS SECURED AND ENORMOUS LOSSES AVOIDED BY FREEING CATTLE FROM TICKS.

In order to secure some direct evidence from Stock:owners regarding the benefits derived from the Tick Eradication work carried on in the Southern States of North America, a Circular was sent out to a large number of Representative Cattle Owners by the Department of Agriculture, asking for replies to various specific questions concerning the results of the work. The questions are given below, with their summarised answers. These afford most impressive evidence, not only of *enormous losses prevented*, but also of *immense gains obtained* by the dipping of animals to free them of Ticks.

Question.—What were the approximate annual losses of cattle from Tick-borne diseases before the Tick Eradication work was started?

Answer.—15.3 per cent.

Question.—What has been the annual loss of cattle from Tick-borne Diseases *since Tick Eradication started?*

Answer.—1.3 per cent.

NOTE.—The answer to this question should be compared with that to the first question, when it will be seen that the Tick Eradication work has resulted in the losses *being reduced from 15.3%, i.e., practically to vanishing point.*

Question.—What was the average value of 3-year old steers in your Co nty before the Tick Eradication work was started?

Answer.—$16.15 or (£3 7s. d.)

Question.—What is the average value of 3-year old steers now?

Answer.—$25.28 or (£5 5s. d.)

NOTE.—In comparing the replies to the two preceding questions, allowance has to be made for the recent general advance in the price of cattle. When this is done, the result shows *that there still remains an appreciation in value of 40% which can be properly said to be due to the absence of Ticks.*

Question.—Is there any difference between the average weight of cattle now and the average weight before Tick Eradication was started? How much?

Answer.—Yes. Average increase 22%. Average weight increase 116 lbs.

NOTE.—Taking the value of the animals at 3½ cents. (1¾d.) per lb. (the average for 3-year old steers,) *the average gain, due to dipping, works out at $4 (16s. 8d.) per head.*

The above figures prove beyond all doubt that the cost of freeing cattle from ticks is not an "expense," but an "investment," which brings in most excellent "interest" in the form of a greatly increased value of animals treated.

:o:

WHEAT AND MAIZE.

THE WORLD'S SUPPLIES OF GRAIN.

The International Institute of Agriculture, Rome, sends out a report at intervals. The report before us being as follows:

Only a few years ago the number of people who took an interest in any statistics of available foodstuffs was quite a limited one, since, apart from unusual occurrences, each agricultural season furnished a sufficiency for the supply of the world as a whole, and no anxiety was manifested on the subject.

Such is not the case at present. Without dealing with any difficulties arising in countries where international trade is subject to considerable interference owing to c rrent events, it may be affirmed that almost everywhere in Europe, both in belligerent and neutral countries, restrictive measures have been taken by the Governments with the view of controlling consumption. In some States the authorities have considered it advisable to adopt very severe measures, going so far as to compel private persons, under pain of fine and imprisonment, to collect all kitchen and table remnants and to deliver them to the authorities. People now take little notice of the fact that day by day the bread becomes darker in colour, that consumption of some foods of prime necessity is limited to certain days of the week, that the manufacture of fancy descriptions of food is definitely prohibited. Does a crisis in the world's foodstuffs exist, and to what extent? As regards the countries in our hemisphere and equally in those of the southern hemisphere will it be easy to bridge over the gap until the next harvests, with the earnest hope that they will be more plentiuul than the last? This question is debated no longer merely by students of economics, or by specialized publications: all the newspapers and with them the whole current of public opinion take up the matter most strenuously, imparting fear to timorous people, and reassuring those who invest everything with rose-colour, not a difficult task.

These fluctuations of opinion may be brought to an end, for sound bases for defining the situation, for what it is worth, are actually in existence. The principal producing States publish data as to their yield of the cereals, while almost all civilised countries furnish trade statistics.

* * * * * *

Wheat is the most important cereal, and reports were received from every country which was any factor in the production of wheat, including Roumania and Russia, but not Germany and Austria.

The wheat crop of 1916 was 300,000 quintals less than the previous year, and 100,000 quintals less than 5 years average from 1911. The report states:—"It is useless to ignore the fact that the wheat crop of 1916 is unquestionably bad as compared with that of 1915." It shows in fact a deficiency of more than a quarter by comparison, and one-eighth by comparison with the average of the previous 5 years.

The next most important crop is corn, otherwise maize. The reports states that this presents the most unfavourable statement among the five cereals for which the statistics were given. The year 1916 finished with a deficiency of 52,000,000 quintals, in spite of the fact that the reserves from the previous great crop amounted to 55,000,000 quintals. The serious side of the situation comes out very clearly when it is remembered that the crops of 1915 were very abundant, and that large reserves were carried into 1916. These reserves amounted to 218,000,000 quintals of all cereals, and this has been completely exhausted.

COCONUT BEETLES.

The following Report by the Government Entomologist h[a]s been sent us by the Hon. Director of Agriculture. We do not publis[h] all the reports we get thus as made by the Microbiologist and Ent[o]mologist, but only such as present some new points, as naturall[y] many specimens sent and reported on are of the same nature as man[y] that have already been dealt with.

Rutelid Beetle from Coconut at "Retreat," Portland.—Inquiry of Lion Isaacs, Esq., Mandeville.

Report: The beetle has done "a tremendous lot of harm sinc[e] the cyclone last year." The specimen was taken out of the heart o[f] a coconut palm.

The Insect: Macraspis tetradactyla L. (Official No. J. 638 o[f] collection). This beetle according to the classification of Sharp in th[e] Cambridge Natural History Vol. "Insects," may be classified a[s] follows:—

ORDER..........Coleoptera (The Beetles).
Series I............Lamelicornia,
Family............Scarabaeidia,
Sub-family........Rutelides.

The other sub-families of the Scarabaeidae may be set out wit[h] a view to showing the natural affinities of the Rutelids to which th[e] present specimen belongs:

Coprides..........Dung-beetles, Tumble-bugs, or Scarabs. Mostly beneficial.
Melolonthides......Chafers, May-bugs, etc. Many serious pests Adults feeding upon foliage, grubs at th[e] roots of crops, grasses, and trees.
Dynastides........Rhinoceros or true Coconut and Palm Beetles the Hercules Beetles, etc.
Cetonides.........The bumble flower beetles. Many pests.

Very little is known of the habits of the Rutelids. Sharp in th[e] Cambridge Natural History, l.c. pt. 11, p. 198, says: "The Rutelide[s] number about 1,500 species; there are many insects of brilliant metalli[c] colours amongst them but very little is known as to the life history The larvae are very much like those of Melolonthides" (whitegrubs.")

According to Lefroy (Indian Insect Life, p. 254) the Rutelides the "Chafers" of India and the East. The life history of Anomal[a] varians—a serious pest of rice, and other cereals when in the gru[b] stage—occupies one year. The general habit would appear to b[e] a root-feeding grub and a leaf-feeding adult.

The exact habits of Macraspis would form a point for investigation by the Entomologist. Possibilities suggesting themselves, if on[e] might draw analogy from related forms, would be: grub in decaying palm stems, in decaying stumps, in nearby decaying wood, at the roots of grasses or other herbs, etc.

Control: The killing of the adults by means of applications o[f] arsenate of lead, or other arsenicals to the hearts of the cabbage, whil[e] no doubt beneficial, should be supplemented by an attack directed upon the breeding quarters of the adult—such future action depending upon the results of an investigation upon the estate by the Entomologist.

The arsenate of lead may be incorporated and applied along with Bordeaux Mixture without impairing the effectiveness of either insecticide or fungicide. If arsenate of lead cannot be procured it would be well to import arsenate of lime which is a very cheap and safe arsenical for general work and presently available whereas the price of lead has caused arsenate of lead to soar to prohibitive prices and be scarcely procurable. In applying the new arsenical, reckon 1¼ lbs. arsenate of lime as equal to 2lbs. arsenate of lead in efficiency. It will be seen that while this preparation is cheaper than other arsenicals, it combines the safety of and stands greater dilution than arsenate of lead.

Arsenate of lime can as a general rule replace arsenate of lead and can be mixed with such fungicides as lime-sulfur and Bordeaux Mixture. Caution should, however, be exercised at first on tender foliage until the effect of the spray is seen.

ARCHIBALD H. RITCHIE.

:o:

LEAF BITTEN DISEASES OF COCONUTS.

(By S. F. Ashby, Government Microbiologist.)

Several distinct diseases are included under this popular name. At least four forms can be distinguished in the field of which the causes are different. During the last couple of years two kinds have become very conspicuous in northeastern parishes. Three of the forms are caused primarily by vegetable parasites, and in each of them the heart-leaves are the first parts to be attacked before, being pushed out into the light. As attack occurs while the leaflets are pressed together on the stalk, they are killed down to the same level giving a chopped off or bitten off appearance to the leaf when finally pushed out—hence the popular name.

The most frequent form of the disease is caused by the Pineapple Fungus (Thielaviopsis paradoxa von Hohnel), another widely spread but less frequent form, probably by a small yeast. The other kind due to a vegetable parasite is caused by a downy mildew (Phytophthora sp.) and is more local and rare. The further kind due to the rhinoceros beetle (Strategus sp.) shows the leaves torn or pierced. For convenience the forms may be named:—

1. Pineapple Leaf Bitten Disease.
2. Hard or Little „ „
3. Phytophthora „ „
4. Rhinoceros beetle „ „

1. *Pineapple Leaf Bitten Disease.*

This form of the disease is very conspicuous now along the north-east coast. It can be observed on bearing trees and those not yet in bearing.

Symptoms: The younger green unfolded and unfolding leaves appear bitten off at the ends or show successive leaflets lower on the stalks broken or reduced to stumps. Those nearest the heart show spots on successive green leaflets which bend over or break and hang down at these points.

Leaves just pushing up can be detected with black tips. If

.e end of the heartleaf is cut out with the white leaflets overlapping ıd pressed on the stalk, characteristic discoloured patches and spots ill be seen. Infection usually starts as a yellow discoloration with brown edge along a narrow line beside the ribs of the leaflets; the fection runs across all the leaflets overlapping at that point. These ng narrow spots widen to wedge-shaped patches with dark brown 'oad edges and a pale brown centre with the skin raised into a blister that it can be torn off to expose the fibres with the tissue between em, *more or less decayed away.*

If infection is high up only the tips of the leaflets become black. heartleaf may show one or more wedge like patches of disease. ıots are also present on the leaflets, at first minute, round or oval, llowish with depressed centre, later with pale yellow centre and own edge; by union these become patches; in bad cases the leaf alk (rachis) beneath the diseased leaflets is attacked by a dark own rot so that when pushed out the end of the limb may break off. ɔots and patches show black specks consisting of spore masses of e fungus. The frequency of infection beside the ribs of the leaflets due to a line of thin cells there which regulate the opening and closing the mature leaflets in dry and moist air, so as to control evaporation water from the leaf pores which are confined to the under sides the leaflets.

The disease, as already pointed out, starts on the heartleaves ıile still white and tender before they push into the light. Just ıat conditions favour this infection cannot be stated yet. Check growth during a period of drought may have started it at some tates while the last two unusually wet years have made it epidemic.

The dark spores of the fungus are scattered by breeze, insects ıd rain drops carried by wind. The same fungus plays a part in em diseases of the coconut entering at wounds or disease spots due other causes, and rotting out the heart of the tree leaving a mass dry fibres. It also causes a black heartrot of planted cane tops ıd a banana bulb rot.

Where Budrot *(soft stinking bacterial rot of the bud)* is pre- lent, and that is the case on most northeast coast estates now, is Leaf Bitten Disease seems to lay the tree more open to attack that fatal disease. It is also being followed in many places by the riped weevil (Metamasius sericeus) which is attracted to the rotting tches on the heart leaves.

The life history of this weevil was worked out by M. Lefroy ı canes at Barbados. The lengths of the successive stages were und to be:—

Egg	4 days
Larva or grub	7 weeks
Cocoon or chrysalis	10 days
Adult weevil	several weeks

ıe grub alone does noticeable injury, it is also the long lived stage. is about 9 weeks from the laying of the egg to the moment when e weevil is ready to break out from the fibre cocoon. The grub res holes through, and eats away the diseased patches, working ım them into the sound tissue, and considerably enlarging the ury in the leafstalks (young limbs). It can pass from one young f to another in the heart. There is no evidence to show that this evil will attack sound growing young leaves directly; so long as

growth is normal and vigorous at the heart the grub of the weevil starting work at the spots and patches due to the fungus is not likely to endanger the life of the tree. Should growth be checked by shaking due to heavy wind (root injury) by drought or by water-logging of the soil, the weevil may possibly ruin the heart although no such cases have been observed.

This insect being an active flyer, no doubt, plays a part in spreading the disease by carrying the spores of the fungus on its body; the opportunity which neglected cases of Pineapple Leaf Bitten Disease offer for the multiplication of the weevil (one generation every nine weeks), increases considerably the chances of spreading Budrot infection by the insect if that disease is already present on the property.

Treatment: The actual amount of injury done by the disease itself is a matter of controversy. Recovery not infrequently occurs naturally, but is usually temporary. The fact that Budrot is now very prevalent, that Leaf Bitten trees are more open to attack, and that weevil frequently follows pineapple fungus, enlarging the injury, spreading that disease and also Budrot, points to the need for attending to the disease.

Experience shows that if the visibly diseased leaflets on the young limbs near the heart and the diseased ends of the heartleaves are cut away and a mixture 1 part lime and 1 part pulverised sulphate of copper thrown in, a sound heart may push out, but frequently it remains infected owing to the difficulty of digging deep enough into the heart to cut out all the diseaased tissue with certainty. The more drastic method of chopping back the whole bud until no more discoloured leaflets show in the heart has therefore been adopted. The prunings should be burnt and the chopped surface covered by a pint of a mixture of one part salt, one part lime and one part bluestone, to prevent, for a time at least, infection by fungus, and keep away the weevil from the wounded heart. Following treatment the chopped limbs of the young leaves grow rapidly (about one inch per day—on good soil in a rainy district), but unequally, so that after two to three weeks the heart has opened up considerably and scattered the dry mixture. If disease does not show again on the new heart growth in 4—6 weeks a recurrence is said to be unlikely. This means (1) that after 4—6 weeks growth will have pushed out the lowest parts of the young leaves so that any deep infection not reached by the chopping back will become exposed if present. (2) that the young growth for the first month or so after treatment is more sensitive to infection from without than when older.

In the event of infected leaflets being pushed out (case 1) the growth must be chopped back again and the wound covered again by mixture.

To prevent reinfection (case 2) experiments are being tried in spraying the new growth with bordeaux mixture after 2, 3 or 4 weeks. A good drenching should be given to the new growth, so that the liquid will run down into the heart.

To try and prevent any new infection, that might be overlooked, attracting the weevil, an ounce arsenate of lead (powder) per gallon of bordeaux may be used or the bordeaux can be prepared with sea water using 20 per cent. more lime than with fresh water (5 pounds bluestone 5 pounds lime instead of 5 pounds bluestone; 4 pounds lime to 50 gallons). Trees chopped back for this disease should be

watched and if the new heart stops growing Budrot should be suspected. If the latter disease is attacking untreated trees close by, the stoppage of growth is almost certainly due to it. The tree must be cut down at once, the diseased bud chopped up and thoroughly burnt. Special care should be taken to disinfect cutlasses, axes, clothes and feet after treating a case of Budrot before dealing with cases of Leaf Bitten Disease. Budrot being by far the more serious disease should always get first attention. The treatment frequently means the loss of 6—12 months growth and a crop of nuts. Young trees recover the more rapidly. In one case between 80 and 90 per cent. of the treated trees had grown well six months after treatment; in another field on the same property only about half the treated trees were doing well 6—8 months after treatment. The disease followed by weevil had reappeared on the other half which needed treating afresh. The treatment has been widely adopted on the northeast coast, so that conclusions as to its effectiveness and profitableness ought to be possible later in the year, if no hurricane intervenes.

Drawings of the Pineapple Fungus will be found in plates 26—28 Bulletin Department of Agriculture No. 6, and again in the free illustrated pamphlet on Banana Diseases.

2. Hard or Little Leaf Bitten Disease.

This disease is more widely spread through the coconut cultivations of the island than the disease just described, but has by no means, attained such epidemic proportions.

Symptoms: As a rule short limbs can be seen in any part of the crown with a bitten off appearance of the foliage: the leaflets are frequently reduced to short dry stumps and the limbs brown and dried up. Such dwarfed withered leaves are frequently mingled with normal green leaves, showing that for a short time good leaves may be developed. In a bad case all the youngest leaves in the heart remain dwarfed and the ends wither up giving the tree the appearance of having lost its heart and resembling an advanced case of Budrot. Affected limbs which are still living show long brown raised cracked and very hard patches on the upper surface. This condition may be present on all the leaves in the heart and reach deep down into it. As the affected limbs and strainer become dard and unyielding, the youngest growth is held as if in a vice; if able to push out the leaves are dwarfed and the leaflets deformed and twisted from having developed under great pressure. If the heart fails to push out it hardens and dies, and the tree ceases to grow and eventually dies. When such a bud is chopped open the heart is found brown and hard without odour and with no signs of soft rot. If Budrot is prevalent in the cultivation the tree may be killed by a secondary attack of that disease which may therefore follow both Pineapple and Hard Leaf Bitten Diseases. Trees not severely attacked by this disease may recover naturally, at least for a time; the bud leaves in such cases are shorter than usual often curved or twisted, and may show cracks on the limbs from which a colourless gum oozes, hardening into reddish lumps.

In the early stage of attack the leaflets and limbs show yellow spots, and after the brown raised cracked areas have appeared on the limbs these are bounded by a yellowish waxy looking zone. Be-

tween the cells in these yellow spots and patches a very small yeas can be seen in quantity and cultures have always yielded the sam yeast, which, as a rule, is the only organism to develop. The sam yeast has been frequently found in a yellowish sodden rot of coconu trunks, sometimes in association with pineapple fungus.

Treatment: The same treatment has been adopted as for th Pineapple Leaf Bitten Disease, and in some cases with success. Thi disease tends to go deeper into the heart, so that it is often difficul to get away all the diseased tissue by chopping back the bud, henc recurrences are more frequent..

It has been pointed out already that this disease may kill th tree. The hardened tissues do not attract the striped weevil as that insect has not been observed to follow the disease. It may, however be followed by soft stinking Budrot.

This disease has been frequently confused with Pineapple Lea Bitten and both with true Budrot, hence trees with Leaf Bitten Disease have been cut down and the buds burnt—an unnecessary sacrifice It may also have given rise to the impression that the pineappl form can be fatal.

3. *Phytophthora Leaf Bitten Disease.*

This form has been found in one district where Budrot is very prevalent. It was seen on a few trees only and appeared to have no direct connexion with the typical soft stinking bacterial rot which was general. Yellow spots with brown edges are present on and run across a series of overlapping leaflets in the heart; a delicate mildew may be visible on the spots. The affected leaves when pushed out into air and light show brown spots on the unfolded leaflets at the same level. The fungus is a downy mildew; two kinds have been found in limbs and hearts of coconut trees in Jamaica (see account under Bud Decay in Bulletin, Department of Agriculture, No. 8 1915).

Trouble from this disease has been so rarely observed as yet that a description of typical symptoms in various stages is not possible. A prevalent and destructive form of Budrot due to a downy mildew is present in some districts in India. Bordeaux or burgundy mixture is the recognised specific for diseases caused by downy mildews.

———:o:———

FOOD CROPS.

The question that is giving great concern at the present time to every thinking person, is that of food crops, i.e., the abundant production of local foods that may substitute in a measure, at any rate, the imported articles of foods which have become scarcer and dearer every month of late until they are almost at famine prices.

There is no saying if they may not become worse, although we hope for abundant crops in all allied countries, and a realisation of the great efforts that have been made to extend the land under such crops.

There are some very necessary foods which we apparently must have, and which we cannot raise here at all, in a commercial sense. The chief of these is wheat, from which we get the white flour which makes bread, spoken of as the staff of life, (though that name really applies to any kind of bread.) In olden times in Britain, barley was the grain from which bread was commonly made. In German countries rye

was the staple grain for bread-making. Wheat bread was a com paratively late development, and at first an expensive product. Th opening of the great wheat fields of the vast and rich prairie land of the United States, made wheat a cheap and abundant product and later there was a great development of wheat-growing in th great pampas (or plains) of the Argentine, the great steppes (or plains of Southern Russia, the prairie lands of Canada; and in India an Australia.

At one time—not long ago wheat bread was unknown i South America; the staple food there was cassava bread. It is onl in very recent years too, that wheat bread has taken hold ove Jamaica, and there has been a steady increase in our imports of flour Unless wheat flour had qualities that appealed to people, the deman for it would not have spread and increased as it has done. In ever way it has commended itself as a commercial product. The land capable of wheat growing were immense, rich, and easily cultivated The composition of the wheat grain is more marvellous than an other grain in its complexity of usefulness, and each part has a specifi use for man and beast. The outer layers commend themselves a wheat bran; the inner layers as wheat middlings or seconds, and thirds meals more largely used for the feeding of domestic animals tha any other, except perhaps cornmeal. From the inner parts we hav various grades of coarse and fine flour. This flour contains glute of a quality which readily makes a sticky dough, which, mellowed b yeast bakes easily into the finished product—the popular loaf of bread

In the Southern United States, the popular bread of the masse is still corn bread, although this now is usually blended with a pro portion of wheat flour, which may be anything from one part of flou to three of cornmeal, up to the reverse. There, people have bee accustomed to eat corn bread and the flour is the diluent. Here w have been accustomed to eat flour bread, but we should educate our selves to eat corn bread, that is, the cornmeal would be the diluen of the flour, beginning at one part of cornmeal to three of flour whic makes an excellent loaf, and working up to half and half which is stil a palatable and most nourishing bread. At the present price, a loa consisting of 25% of cornmeal and 75% of wheat flour would giv us at least two ounces more of bread for our money; half and hal would give us at least four ounces more. Is not this a consideratio to be thought over and acted upon?

Many people have spoken to us and written to us, and som have even argued about wheat—Why don't we raise our own? An when we say we cannot, they would know why. Because we have no the climate nor the conditions. A few wheat, oat, or barley plant raised in a garden in the hills, do not mean anything. After th growing there is the threshing—and fancy doing that by hand—an the milling, both elaborate processes.

Let us rather concentrate thought, speech and effort on providin all the grains that we can grow readily—Corn and Guinea Corn— both easily gathered and easily grained from the stalk or husk, an both of which are easily ground in a common mill and both of whic make good porridge, puddings, cakes, scones, and mixed with whea flour—good bread.

Corn (maize) is commonly grown. Even in ordinary years, w can with proper methods (all easy to learn and practice) compet

with imported corn. At this time imported corn should have no chance in our markets. But we must raise quantities enough to serve us in abundance (1) to feed our households; (2) to feed our horses, dairy cows, and fowls, and (3) with a surplus to sell to serve those in the towns and others who cannot raise corn. The proper methods are: Land properly turned over and made fine; selected seed corn, carefully planted: weeding in good time before grass and weeds crowd the young plants; thinning out the weak plants if too many plants grow, dusting the plants when the corn worm is seen, with an insecticide, or hand picking these pests; and thoroughly drying the cobs, and then the grains to 60 lbs. to the bushel at most.

—:o:—

KEEPING CORN.

It is one thing to raise a good crop of corn, and it is another to attempt to store the grain so that it may serve one's purpose until the next crop. The corn weevil has to be contended with. This weevil is generally already present in the field and all those cobs which are bare at the point are certain to be attacked. The stalks showing such cobs should be cut out and fed to stock. Only those cobs completely covered with a tough husk should be favoured.

The best seed cobs should be selected for seed carefully, the husks turned back and any cobs not filled up to the tip and showing irregular rows of misshapen seeds, even if the cobs are large, should be rejected. Regular rows, well shaped seeds, cobs filled to the tips, are what is wanted for seed. The cobs should be hung up in an airy place and examined from time to time. The other cobs should be dried thoroughly and then a bushel of grain shelled out and dried. If this weighs 66 lbs. to the bushel it is not dry enough. When the grain from the cob is 64 lbs. to the bushel it is dry enough to shell, and then the grain needs further drying—red corn to 62 lbs., to the bushel, yellow corn 60 lbs. to the bushel. It is then fairly well dry enough to take to market, but not dry enough for our standard of seed corn which is 60 lbs. for red corn and 58 for yellow corn—American corn is 56 lbs. to the bushel, but ours does not ever dry out to that. Only a very small proportion of American corn is kiln dried; the great majority is field dried; the ripe dry stalks stand long in the field and get the dry cold autumn or fall weather on them, so that the grain does not need further drying. It would not suit here to let the stalks stand so long as our atmosphere is humid and we get rain at any time. We must let our cobs dry as far as we can, and then further dry our grain.

On a small scale corn can be stored in boxes or barrels or bins. Gasolene drums are the very best. In this way it can be preserved with Napthalene obtainable at this office. The Napthalene in the form of a powder should be placed in a small muslin or porous cloth bag at the rate of a dessertspoonful for every bushel of corn. This is placed at the bottom of the barrel. Another lot can be placed in the middle of the barrel but we have not found this necessary. The barrel or whatever is the receptacle must be close shut. Napthalene is easy to get and to use.

On a large scale Bi-Sulphide of Carbon must be depended upon to kill weevils in corn. This chemical is a liquid gas heavier than air with an evil smell, and very inflammable, so that no light nor

:ven a lighted cigarette must be brought near to it. It cannot be dealt)ut in pints and quart bottles. It is only sold in iron drums at 8d.)er lb.; the drums cost 2s. 4d. but are returnable. To use Bi-Sulp- iide, care must be taken not to inhale it. It is used at the rate of a half)unce per cubic yard of space. For a 4 bushel bin of corn, we ıse small tobacco tins, putting a tablespoonful of the liquid in each; he tin is placed on the top of the corn, the lid shut down, and left or 24 hours. Bi-Sulphide is a gas heavier than air so it sinks through he grain, and kills all animal life. In a large storehouse, or where ırge receptacles are used and larger quantities of the chemical. ins would be placed at intervals not of course one large tin in one pot. When the grain is aired, the smell of Napthalene or Bi-Sulphide asses off, and there is no trouble either with smell or flavour. Neither Japthalene or Bi-Sulphide affects the germinating quality of the grain)r seed if used aright.

———:o:———

GUINEA CORN.

Guinea Corn is at present hardly grown at all, but at one time he plains of Vere and the coast of St. James—dry districts—were ɔvered with Guinea Corn; large and small planters grew it. The orridge and cakes of the household were made from it; the dry stalks 'ere cut and stored in stacks and fed to cattle and horse stock when rain was scarve. It is no use growing this grain on a small scale r only one person in a neighbourhood, for then the small birds which re exceedingly fond of it, attack it in crowds.

There is one kind of Guinea Corn which has a large white grain, nd grows in 4½ months, is easily threshed and cleaned and the grains f which make an excellent porridge and bread. It is called Feterita. , is a great drought resister. The Jamaica Guinea Corn can be lanted in August and will head in January. It is the most prolific.

———:o:———

CROSS-FERTILIZING CORN.

There is no pure hybridized corn to be had; the yellow and half- ellow seed corn, sent out has been grown from hybridized corn; ıost of it has been crossed again. This type, the half yellow, is the ardiest and most productive, better than the pure red or pure yellow. ut very little of the old pure red flint corn can be got now; it has early all had a cross of the yellow. This can be known from the ıape and the dent at the broad end.

Last year we imported quite a lot of fine American seed corn the varieties which have done well and done good here, but most it was wasted; there was no demand. As a rule this corn does not ow well and make good cobs, although we have seen at Ulster Spring ɪod cobs of the pure American corn. The purpose of growing this rn is to cross-fertilize our native corn and this is done from the ɔllen. This cross-fertilizing is interesting and uesful work for School ardens. Plant two rows, one of American corn, one of native corn; ve the latter two weeks start if red corn; one week if yellow. When ɪe pollen appears on the native corn cut it off, so that the cobs, assels) must be fertilized from the pollen of the American corn. ne must not look for any different appearance in the grain reaped; e pollen only affects the germ or embryo. It is when this cross-,

fertilized grain grows and produces grain, that the result of the cross will be seen. A direct cross like this gives vigour to the resulting grain.

:o:

POTATOES.

In the JOURNAL for August each year, we remind readers interested in growing "Irish" potatoes that in order to import good seed potatoes in good time we should have orders early. This applies not only to those who plant in the lowlands from October on, but those who do *not require the seed until the spring.* Last year we especially emphasized the need for early orders, as potatoes were scarce and going up in price, and freight space on ships was a matter for early arrangement. We also wrote letters to the Newspapers pointing out what a quick-growing crop potatoes were, and that November was the best time to plant in the lowlands. We regret to say that at that time no one apparently had awakened to the food crisis that we had seen looming ahead, apart altogether from the local effect of hurricanes on our food crops: at any rate there was little response. It was not until the spring that there was a sudden realization of the world's position and our own position. And then what a large number wanted to plant "Irish" potatoes and asked for seed. What a large number too we realized were taking an interest in agriculture and in cultivation that apparently had not given agriculture or agriculturists a single thought before. And what a large number joined in saying, "why don't you do this, and why doesn't your Society do that?" In most cases the thing suggested was already a settled practice of this Society, and in others had been put into effect the moment the war broke out. However, it is good to see the awakening.

Numbers in the lowlands wanted to plant potatoes in April and May and could see no reason why they should not grow.

Potatoes are a crop of a temperate climate; they are natives of the temperate altitudes of South America. The time to plant in the lowlands of Jamaica—as has been reiterated a hundred times in this JOURNAL—is late in October, if the risk of wash-out from the heavy rains due then, be taken, but preferably early in November so soon as these rains are over. There is usually moisture enough in the soil and seasons enough to grow a good crop. If the risk of dry weather be taken, plantings can be made December, January, February and March. In hot and humid places March planting is rather late; the potatoes come in at the end of May and are not usually good; they are apt to run to bush—grow long stalks—and the tubers begin to sprout in the soil before being fit.

We should say planting can be done in the winter with success up to 1,600 ft. Over that altitude the winter planting does not give good results; the potatoes do not fail but do not give a good bearing. We made a practice once of planting in November at 3,000 ft. in order to raise our own seed—as the first crop from imported seed gives better results in the spring planting than from the imported potatoes. But seed potatoes must be raised high up in a cool climate. We recommend this practice to be done this year by regular growers in the hills as a PRECAUTION against scarcity of imported seed or none at all, in March.

The greatest drawback to the new or casual grower is that he

does not make up his mind to plant until the time of planting is (
then he expects seed on demand, and is wroth that the Society d(
not have it; then if he gets seed he hastily turns over the land a
plants right away. THE TIME TO PREPARE LAND FOR NOVEMBER PLAN
ING IS NOW. *Where grass or bush is long, get it cutlassed or hoed c
at once, if sticks are thick burn, but do not burn grass or weeds;
them lie two or three weeks to wilt, then break up the land rougł
with plough where it can be used, or fork or hoe; the grass and wee
will make good manure. Of the hand implements we prefer the diggi
fork. Dig deep; better still trench, which is done by flinging out ea
forkful of the first row and if the trench left is not deep enough, fo
up the bottom; then the next forkful is put in the trench, and so c
always having an open trench in front. This is like the double forki
of St. Mary, only the bottom of the trench is simply forked up, n
taken out and placed on the top of the first. Then later when t
rough clods have been weathered by sun, breeze and rain, the land w
be easy to go over and refine. If manure is available in plent
it should be spread before this refining; if not plentiful, keep to ac
to the furrows or drills at planting.

When the land is thoroughly refined and is soft at least 6 inch
deep, it is ready to make the drills. These should not be less tha
6 inches deep and 2½ ft. apart. Manure can now be added at tł
bottom of the drills just before planting. The potatoes of a si
larger than a pigeon egg can be cut into two sets, large potatoes thr
sets, the smaller potatoes can be planted whole; there is little differen
in results so long as the set is large enough say not under 1½ ounce
Plant 10 inches apart in the furrow. If the drills do not happen t
be deep enough and are only 4 to 5 inches deep, plant the seed fir
and put manure on the top. In cold countries it is the practice to rid
up high because all the heat is wanted on the soil that can be go
Here where it is hot enough and sometimes very dry the roots ar
wanted to be kept cool and moist. As near level cultivation as pos
sible is best. After planting do not fill up the drills level, leave
furrow of two inches; when the young plants are three to four inche
high, first fork lightly—not deep enough to hurt the rootlets—betwee
the rows, and draw a little earth to the potatoes. Later when th
plants are 7 or 8 inches high cultivate between the rows two or thre
inches deep, and hill up slightly again. The plants will then preser
the appearance of being on a slight ridge not a high ridge. In 1
to 12 weeks the potatoes are fit to lift, but in wet weather may take
little longer. The haulms or stalks should dry up when the pota
toes are fit.

———:o:———

ONIONS.

Owing to the high price and scarcity of onions, there has bee
much enquiry about growing these here.

We regret that we did not print off a thousand copies of the ver
full article on "Onion Growing in Jamaica" written by Mr. Spoone
and contained in the JOURNAL for January, 1915. We have supplie
copies of this JOURNAL until we are out.

Onions can be grown in Jamaica from the plains to 4,000 ft
altitude; but while the European varieties of onions which grow ver
large and make fine eating, can be grown in the hills, there is onl

one variety of onions to grow here commercially and that is the one called "Bermuda," the true seed of which can only be got from the Canary Islands or Madeira—the best comes from the Island of Teneriffe. We get seed of this every August and last year wrote about growing onions, pressed it, and stocked large supplies of seed. This seed does not keep its vitality long here, and so few at the time responded that we had quantities of seed lost. The food crisis had not then grown acute.

Onions have been grown—not a patch but a large field in St. Andrew, Salt Ponds in St. Catherine, and by the Mr. Spooner mentioned, in Vere. But we believe the best locations are in the hills where ordinary vegetables thrive, for there they can be grown all the year round to keep up regular supplies from small fields, not one large field at a time, as in the lowlands where the growing would be done only in the cool weather.

We are re-publishing Mr. Spooner's article below a little curtailed and will print off copies in a leaflet.

We have hitherto imported all the onions used here; if they were fresh and cheaper our local onions could be, no doubt more would be used. At present it is necessary that we raise our own onions as they are a healthful article of food and there is no need to do without them when we can grow them. Send your orders for seed at once and we shall import plenty.

We know of one successful cultivation on a large scale started in the spring; it is on a coffee estate in the *Port Royal Mountains*, high up, and by the time this is read good crops will be ready.

The name given to this onion is only on account of its having been largely grown in Bermuda for export to the United States. The seed from which these onions are raised is not grown in Bermuda, but comes from the Canary Islands, which are situated off the north-west coast of Africa in latitude about 28 North. The conditions as to soil and rainfall are favourable. It is important, then, to get good fresh seed from the Canary Islands, especially as onion seed loses its power of germination very quickly in the tropics. The onions in the Canary Islands apparently produce seed about July, so that it is possible to get fresh seed in the West Indies in August. Onions here generally take 170 days between the date of sowing and the date of harvesting, so that seeds sown on say September 15th, will give onions to harvest at the end of February to the first week in March. As a rule, the New York Market will be pretty bare of supplies of Bermuda onions at this time, and so a large demand is often found, and good prices are obtained. Towards the end of March to the end of May, enormous quantities of these onions come into the New York Market, from Texas especially, and much lower prices result. If you grow onions for export therefore, grow them early.

SOIL.—In the tropics Bermuda onions will grow on any kind of land as long as it is well drained, the only difference between good land and poor land will be that the onions will be smaller and harder on poor land and larger and softer on rich land. Too much rain also makes a larger and softer and less saleable onion. Too little rain makes very small hard onions, the same as could be produced by the right amount of rain on poor land. In the tropics it is not a good plan to manure land for onions, the manure makes the land too open,

and the onions, even if they grow well, will be too sappy and thick necked and of bad keeping quality and unsaleable shape. Of course, I refer to pen manure; on poor land the use of Sulphate of Ammonia may help onions along if used in small quantities. In cold countries onions are liberally manured, no doubt to render the soil warmer, but this is not necessary in Jamaica. The best land for onions is a loamy soil inclined to be silty or sandy rather than clayey although on well tilled well drained clay loams excellent onions can still be produced especially if the soil contains a high percentage of lime and becomes friable on top when it dries. A clay soil that cakes quite hard on top whilst it remains wet and soapy just underneath is no good for onions. Such a soil would have to be thoroughly drained and treated with crops of Cowpeas and heavily limed or treated with sand before it would do well in onions. The general plan of procedure in sowing onions would be as follows:—

Nursery Beds.—About the beginning of August choose a nice piece of loamy land, sandy rather than clayey and near to a pond or well. Avoid if possible land covered with leaf-mould because this would not be compact enough for a seed bed.

Dig up the land with a hoe about 4 or 5 inches deep and eradicate all the weeds. Work over the land with a hoe about once a week, getting the surface into very fine tilth, but do not go deeper with the hoe than about 2 to 3 inches. As long as you have about one and a half inches of well tilled clean soil on top at the time of sowing the seed this is all that is wanted, for onions like a firm seed bed underneath, not a loose open one. In preparing the land all sticks, trash, dead grass, etc., must be carefully removed, the land should be quite free of anything that would prevent the soil compacting before the seed is sown.

About the beginning of September mark out the land into beds about 3 feet wide leaving paths between the beds, but do not raise the beds more than 2 or 3 inches above the level of the paths, in fact let the path act as surface drains without making the edges of the beds too dry. The young onions can then be weeded by standing on the paths without treading on the rows. If the land is dry you must then begin to water it with a watering can provided with a rose, so as to compact it and to cause all the weed seeds to germinate, in fact it should be watered almost every day for about a fortnight before the onion seed is sown, and also be kept quite free from weeds. The rows for planting out the onions should be opened along the beds just before sowing the seed. The best way to do this is by a string and pegs, the string being stretched along the beds and the rows marked off with a pointed stick held against the string. It will be little use putting the first row of seed closer than 6 inches from the edge of the path as the soil there would be too loose and dry and the onions would only dry off and die. You can get 5 rows of onions 6 inches apart on a 3 feet wide bed and the beds can be made any length you like. A central path down the middle of the seed bed plot is useful for carrying water or for holding water casks which can be filled by a pump placed in a well or pond close by, if this can be arranged. The rows should be marked out about three quarters of an inch deep and 6 inches apart. The seed should be sown at the rate of about 90 seeds to the running foot of row. One ounce of seed contains about 9,300 seeds, so that one ounce will sow about 103 feet of row or rows. These seeds will

not all germinate however; you will be lucky if 80 per cent. of them germinate. You can regulate the size of your seed bed by bearing in mind that you want about 100 running feet of row, or rows, for every ounce of onion seed you sow. After sowing the seed in the little furrow three quarters of an inch deep you must firmly press in about half an inch deep of the moistened earth, with the knuckles. Be sure and press the earth as tightly on to the seed as possible; this is very important. At the same time see that the rows are not left in deep furrows by the pressing; if the soil is only just moist this will not be the case. When a bed is sown give it a fairly good watering with a watering can having a fine rose, and then cover it up with trash for 5 days to keep off the sun and keep in the moisture. On the 6th day take off the trash and on the 7th day the young onions will be peeping through the soil. Give them light waterings early in the morning and lare in the evening, not whilst the sun is hot. Now you must look for ants and caterpillars. Look for every ants' nest near the bed by following the string of ants and pour some kerosene down into the nest, this will soon make them leave you alone.. Carbon Bisulphide is even better than kerosene. Caterpillars are best dealt with by light dustings with Paris Green and lime mixed, 5 parts of lime to 1 part of Paris Green. Remember that nine-tenths of the trouble in raising onions here lies in the great care necessary in the seed bed. Under any circumstances, you will lose by far the greater portion of your young onions by the effects of sun, drying winds, heavy rains, ants, attacks of nematodes and fungi, caterpillars, etc. If you get one fourth of the seeds you sowed to give you onion plants fit for planting out you will have nothing to complain about. You will still have 2,300 plants from 1 ounce of seed, and you will probably lose 12% of these in transplanting, or between transplanting and harvesting, leaving you say 2,024 onions at the harvest from 1 ounce of seed. This means at least 380 lbs. of onions per ounce of seed or abuot 2¾ tons of onions from 1 pound of seed. You may do better than this, at all events you will have plenty of onions to look after. About 70 days after sowing, the onions will be fit for transplanting. In dry districts do not transplant until the largest leaves are as at least as thick as a slate pencil.

Planting.—The land should be forked about 9 inches deep, at least, two months before the young plants are ready to be put out, so as to allow it to get compact before the planting out time comes. The great thing to bear in mind is that whilst onions like a well tilled soil they do not like a soil that is loose in texture below the surface, or rather they do not in loose texture soil give the good hard well formed bulbs that buyers like. A good early forking will get out all the weeds and allow the roots to rot, and render the land full enough of plant food for the onions. When planting out time comes, the land should be perfectly free from weeds, with a fine tilth on top and fairly compact below. Line off the land just as you did the seed beds leaving walks about every 3 or 4 feet and mark out the rows, from the seed bed, cut off the tops to about 4 inches long, take the earth from the roots and carry them in a shaded basket to the planting out field; plant them as quikly as possible in the new spot and after planting out give each onion a little water if the soil be at all dry The plants may look rather sorry for themselves for the first week or so after planting out but as long as they have enough size in the

bulb part when they are planted out, they will soon recover and go on growing again. Nothing more is necessary but to keep the onions carefully weeded, keeping also the first half inch or so of the surface of the soil in a loose condition so as to form a mulch to conserved moisture. Where cocoa grass comes up it is necesary to use a knife for weeding. The surface of the soil can be kept loose by stirring it with a bent piece of sharpened hooping or by a carefully used Dutch hoe with a blade not wider than 4 inches. Practically all the weeding amongst onions has to be done by sitting down in the pathways or by kneeling on them, a tedious business, so that the cleaner the land is made before planting out the onions the lower the weeding bill will be. Onions never come to anything if the land is allowed to grow weeds so that every attention must be paid to the weeding. If the young onions are set out on cane banks of replant land, the land should be banked at least two months before planting out time and kept weeded as clean as possible. The tops of the banks should then be flattened with a beater if they have not become compact by rain or weeding. The tops of the banks should then be lined off marking from the centre line first and three rows of onion plants should be dibbled in, making the rows 6 inches apart and spacing the onion plants in the row from 5 to 6 inches. About 100 days after planting out, the onions will be fit for lifting which is indicated by the tops dying down. After planting out it is good practice to water the young plants by hand if there seems a chance of their dying out from drought, but once they have really taken root they need very little water and if any rain falls in December, as it usually does, it will be enough to carry the crop through. Irrigation water should, however, be available in the case of a very dry year, in which case one or two light irrigations, by running the water down the furrows intended for cane planting will be found to ensure a crop.

Taking 3 rows of onions to each cane bank and banks 5 feet apart 396 onion plants will go to the running chain along the banks or 52,774 plants to the acre. These less say 12% loss will give 46,000 onions per acre, and taking these at an average of 5 onions per pound would give 9,200 lbs. per acre or about 4 1-10 tons onions per acre.

If you get a penny a pound for the onions, which is as much as you will be wise in figuring upon, for exportation, that is a penny a pound on the estate, the value of the produce of an acre will be about £38 5s. 0d. per acre or about the value of 76 tons of cane per acre at 10/- per ton for canes. When the onions are ripe they should be pulled up and allowed to lie on the ground for a day or two, if the weather be fine, for the tops to dry more fully. They should then be carted to a house or shed (a trash roofed shed will do and it can be open at the sides and ends) and there they should be laid on racks made of wire netting or else put on a dry trash-covered floor. Do not heap them up but take every care to dry them in the shade and in a good current of air. In a week or so the tops will be quite dry and the onions will have a dry skin on the outside which will protect the rest of the bulb. Pull off the dry tops preferably or cut them off with a knife if they are thick necked and then grade the onions into several sizes, say three sizes. Pack them in standard sized onion crates, which are articles of commerce, and measure 2′ x 7½″ x 1′ 5″ outside measurement. These hold one bushel of onions each and the bushel weighs from 50 to 53 lbs. according to the size of the onions;

the small dry hard onions of course pack closer than the large ones and weigh more. In packing turn the root end of the bulbs to the slats of the crate and put all the largest onions against the slat. Fill in the centre of the crate with onions of suitable size to fill up all the spaces, as far as possible, and take care to have the crates as tightly packed as it is possible to pack them.

For keeping onions for domestic use do not pull off the tops but select the smaller harder onions, say about 2 ounce ones, and when the tops are dry plait the tops into a rope and hang them up in a cool airy cellar. They will keep for 5 or 6 months, this way and be perfectly good to eat at the end of this time. Onions can I believe be made an industry worth going in for in Jamaica.

My advice to people thinking of growing onions on a commercial scale is not to do so unless they are prepared to do everything thoroughly and put in plenty of hard work, care and patience. They are a risky crop and an expensive crop to grow but still it is quite possible to clear £20 to £25 an acre on them at a penny a pound nett sale price on the estate. In the Island of Antigua, onions are being grown by the sugar planters on the banks of early prepared replant land, the best lands being those at or near the junction of the clay and limestone formations. The rainfall is generally a low and uncertain one but still generally eouugh for onions as the lands retain moisture wells and are thoroughly well cultivated and drained for cane growing. The seed beds are usually placed near to a pond. The onions are graded and packed and exported by a Co-operative Association of the planters, and this Association has agents in the United States and Canada who can direct shipments and see that fair prices are paid for the produce sen them. To meet the fullest measure of success, Jamaica onions should be handled in the same manner. In every instance co-operation amongst producers results in better prices being obtained than would be got by independent action on the part of sellers, and this further co-operation with selling agents results in greater safety against the danger of sending on perishable produce like onions to a market perhaps already temporarily overstocked.

(Sgd.) ARCH. SPOONER.

Reprinted from Journal of January, 1914.

:o:

RABBITS.

Another most useful food crop to the household, one that can be raised in nearly every home, is the humble rabbit or better still the breed of rahbit known as Belgian Hare. The first thing to aim at is to have comfortable houses; the ordinary rabbit hutch of the country rarely brings success. It is usually not rain proof and is not subdivided. Breeding does must be kept separate from bucks; and young does separated from young bucks when 3 months old or so. Secondly, bucks unrelated to the does must be sought for. Close inbreeding is common and deadly in results. Feed must be regular morning and evening at least. Peelings from the kitchen and a variety of green stuff not fed wet. This costs nothing but a little labour. Does should not be bred until they have weaned their young ones at the age of say 6 months, and the weaning should not be done at once but gradually over a few days. Let the doe have the closest privacy when having young, and do not disturb the young in the

POULTRY NOTES.

A very important food crop to Jamaica is that of fowls and eggs. Owing to the hurricane of August, 1916, followed by continuous heavy rains which not only destroyed a large part of the crop of corn just then maturing, but washed out the second lot planted, and beat flat the young corn just started to grow, while little corn could be planted in September and October owing to the continuous rains; there was a very very small crop reaped in January and February this year, when in ordinary seasons it would have been plentiful. The high price of American corn had of course nothing to do with our local scarcity, but was caused by war demands and a short American crop.

Corn is the staple food of our poultry. At 8/- to 10/- a bushel no one who kept more than a few fowls which could get along on household scraps and on what they could pick up, could afford to raise fowls. Imported wheat bran and middlings were also out of the question except for the few who kept a pen or two of pure-bred fowls. Thus we calculate that the poultry population of Jamaica next September will be less than one fourth the usual, and that there will be less than one fourth the eggs available than usual. Of course many people will stop eating eggs and fowls when these are very dear; the poorer people who have a few available will sell them at high prices rather than eat them: so that there will always be eggs and fowls in the markets, but we fear the former at least will be very dear.

As corn will be plentiful by August we urge those in the country to go on setting eggs and raising chickens steadily, although in other years they would not do so at the same season.

But most of all, people should acquire all the poultry knowledge they can. Almost every day we get letters from people asking questions about fowls who mostly complain they cannot get their hens to lay. Now there is a little book on Poultry Rearing in Jamaica, published by this Office, which we found every one of these enquirers had not got, and few of these had read the Poultry Notes in this Journal. A reference to this little book would have saved these enquirers much loss and vexaion of spirit.

We repeat a few hints about setting hens and rearing chickens.

Set in a cool, quiet place, on soft grass or trash; give no more eggs than the hen can easily cover. Make a thick paste of sulphur, lard and kerosine, and rub a little on the hen before sitting- back of the head, on the rump and between the eathers of the tail above the vent. Take the hen off every day for food and water. Do not feed the chicks for 36 hours after hatching until all are eagerly picking round the hen for food. Feed on fine food—no coarse grain or soft sticky food, to start. If the hen is confined, shift the coop every other day; if not confined see that her sleeping place is kept clean. If chickens sleep on droppings or under hen roosts, yaws will surely result. Give cool clean water.

To make hens lay—give a dose of Epsom or Glauber Salts once a week in drinkng water or soft food. A dessertspoonful to a quart of water is enough; same per b. of dry food. Do not feed in the house yard. Never feed whole corn, crack it and scatter it far and wide; keep the fowls busy scratching. We have kept a pen of fowls in this Office back-yard with notable success for years now, no conditions particularly favourable, and the secret is "scratching." A load of horse manure is put down only once a week and the dry food is fed among it. Since January, however, there has been very little grain fed at all; the fowls have got along morning and evening on a monotonous diet of rice bran, fresh coconut meal and a little dry blood. The fertility of the eggs has not been so remarkably good as with grain food, however. Some hens have laid on without a break since October ast. Some have stopped and begun again. They still lay in July. We expect moulting to begin in August. A little tonic powder such as is advertised at interals in this JOURNAL should be given through the moult.

* * * * * *

POULTRY RAISING ON RICE FIELDS BY COOLIES.—Mr. R. C. Sommerville, Darliston, sends us the following interesting note, the more welcome at the present uncture as being suggestive of the utmost economy. So many useful articles are wasted in Jamaica, which might readily be made available for greater food producion. It will be of interest to the readers of the Journal to know how the coolies manage to have an abundance of eggs for sale at Christmas time when eggs are generally scarce:

When a field of rice is reaped in November, millions of seeds fall on the ground and cover the surface of the field.

The wise Coolie does not allow the birds of the air to get all, although large locks of White Wings come down to get their share as the sportsman well knows,

He removes his fowls from his homestead to the rice fields and lets them go. At first they feed ravenously and grow fat very quickly. As the supply is exhausted little by little, they become very active in the search for food and soon begin to lay. These eggs are collected and saved for the Christmas trade. Chickens are also fattened for the market in this way. Thieves seldom or never trouble the poultry as they are watched by children.

Verily the development of this rice industry "is a consummation devoutly to be wished."

—:o:—

COMMENTS.

IMPORTS AND EXPORTS.—Before the war we imported about £60,000 worth of goods from Germany, not a very large proportion of our imports as we then imported one and a third million pounds worth of goods from the United Kingdom and over one and a quarter from the United States. From France we barely reached £5,000 on an average.

In 1916 we imported one and three quarter million pounds worth of goods from the United States, and only a trifle over a million pounds worth from the United Kingdom, and of course none from Germany. It is marvellous indeed how the Imperial Government has managed to keep up exports of goods and provide transport when a little speck on the ocean like Jamaica has got a million pounds worth of goods.

As regards our exports, in pre-war years we exported about £100,000 worth of products to Germany and £21,000 or thereabouts to Austria. To France we sent close on £200,000. The balance of trade with all except the United Kingdom was in our favour; we only exported to Britain about £350,000 worth of goods.

The year 1916 shows a great difference. To the United Kingdom we exported value for £1,217,600 and to the United States £893,709; previous to the war the figures were—to the United Kingdom, £349,918, to the United States one and a half million pounds.

* * * * *

The Director of Agriculture in his report dated 14th May, which is published in the Jamaica GAZETTE, gives the following interesting details:—

The chief feature of the year in relation to the agricultural interests of the colony was the Hurricane in August which practically swept the whole island from East to West so as to destroy the whole Banana crop and to do a good deal of damage to Coconuts, Canes and Cacao. For so serious a disaster to occur two years in succession has been a heavy blow to our chief industry and has resulted in serious losses and hardship to a large section of the community. Owing to war conditions, however, other Staples such as Sugar, Rum, Logwood, Cacao, Coconuts, Annatto, Ginger, Orange Oil and Hides have sold for good prices and the Records of the Collector General show that our Exports for the year 1917 were more than 2¾ million sterling in value or an increase of £600,000 over those for the previous year, comparing quite favourably with our pre-war records for the exports of the island. It would therefore appear that but for the Hurricane, Jamaica would in 1917 have achieved a record in the value of its exports due to the improved prices resulting from war conditions.

The hopeful expectations as to the Sugar Industry were realised, due to the favourable weather and the enterprise of the planters, so that the largest crop of Sugar since 1884, over 28,000 tons, and valued at over half a million sterling was exported from the island. As this

was accompanied by some 18,000 puncheons of Rum worth £350,000 the Sugar Industry must be credited with £850,000 as its contribution to the Exports of 1916 or more than five times that recorded for Sugar and Rum in the year before the war.

Owing to the state of the rum market and the embargo on the importation into the United Kingdom, efforts have been made to reduce the output of rum by making as much sugar as possible. The larger estates have reboiled the molasses and obtained an addition of 'Second Sugar' so as to reduce the amount of material sent to the distillery. Owing to a combination of efforts on the part of the planters in Jamaica, the island Government and the West India Committee in London, arrangements have been made for our Rums to be shipped to England for making munitions at the price of 2s. 4d. per gallon of 40 o.p. Spirit, f.o.b., Jamaica. It is estimated that one million gallons of local spirit will be available and that the planters will by this arrangement secure £120,000 for Rums otherwise unmerchantable so long as the embargo lasts in the United Kingdom. England will also be enabled to save 10,000 tons of Barley or other grain besides economising in coal and labour for the manufacture of spirit required for the making of munitions.

That our canes in Jamaica are capable of yielding good returns with modern machinery has been well illustrated at Morelands Estate in Vere where Chemical Control has been recently established. A return of 1 ton Sugar from 8⅜ tons of Cane has been obtained with a recovery of 1 gallon of Rum at 40 o.p. for every 18 lbs. Sugars in the waste sent to the distillery. The Factory Manager at Morelands having been trained at the Government Labotatory, I naturally take some pride in this record. Such a result as this would indicate that the returns recorded for the Antigua and St. Kitts Central Factories can be equalled in Jamaica in factories less than a third of their capacity.

The demand for Cane-tops has been very brisk and all our available supplies from Hope and Montpelier Nursery have been issued. Favourable reports on 'J.72' have been reported from Westmoreland where this cane is being tried on a fairly large scale. 'B.6450' is considered a first-class Cane in St. Catherine and is worthy of the attention of planters.

In planting new lands it is a sound policy to have a good basis of the 'White Transparent' as this is still our most reliable cane for all sorts of soils, seasons and conditions.

———:o:———

FOOD CROPS.—The report on the world's food crops published on page 273 of this JOURNAL shows how short the supplies were in 1916. Great effort has been made by every country to increase production this year. It is reported that in the United Kingdom in spite of millions of men being engaged on war service and war work, one million additional acres have heen put under crops this year, and the reports are that although there was unfavourable spring weather, the genial summer is making up for that and crop results will probably be good.

The United States however is the most important country in the production of food and it is welcome tidings to hear that all crops are in the most favourable position. There should, therefore, be

however to be taken into account that large quantities of food are usually wasted in war time, and in addition there is the enormous loss caused by submarining of ships loaded with cargoes of food. And this loss has to be calculated for next year.

Jamaica must do her duty in respect of raising food in abundance.

Cultivators have responded well to the call made on them to plant more food crops, but naturally before plunging more heavily, they ask for some guarantee that, when they raise very much larger quantities of foodstuffs than usual, there will be sale at a remunerative price. No planter can be expected to be so patriotic as to make himself bankrupt in raising crops of peas and sweet potatoes, to find no satisfactory market; that would be poor policy for himself, and no good to the country.

The same question is being asked by farmers in the United States; they object to being exploited by speculators and profit mongers, and ask that minimum prices be fixed for their products, and that that minimum be just enough to leave them a margin of profit.

———:o:———

CORN AND CORNMEAL.—Great interest is now taken in the manufacture of cornmeal locally. A good many have provided themselves with small mills, and several Branch Societies have mills for the use of their members. Readers should note that corn will not make good cornmeal unless it is thoroughly well cured. There is a cornmeal factory which has been running for some years at Brown's Town, when there is corn enough to keep it going. Mr. J. H. Levy who owns this factory writes as follows:—

"I find from actual test that the loss in drying the corn as bought from the growers and making it suitable for making meal, varies from 15% to 22½%. I have known the shrinkage to be as much as 25%. Besides the shrinkage in the process of drying, we sustain heavy losses in the natural shrinking of the article and the destruction of the bags used, and when stored in bins and barrels and not used immediately, I have found it actually growing. I expect of course a certain amount of shrinking even if the corn is well cured, but it should not exceed 5% to 7½% at most."

———:9:———

WAR BREAD.—There is already a propaganda in the United States to substitute a proportion of corn meal for wheat flour in bread. If that is the case in the home of wheat flour, how much more should it be the case here. It is the hardest thing to get a proper conception of the world's food situation and the effect it may have on us here. Every country household where bread can be made, should start in at once making their own bread, adding a proportion of cornmeal or sweet potato flour.

Do not be *too much* impressed with the story of the million extra acres put under cultivation in Great Britain and of the bumper crop in the United States. We require to make our own efforts. We were interested in reading the following in the Breeders' GAZETTE of Chicago:

"*Homemade Cornmeal.*—A return to old-fashioned toothsome, nutritious, healthful, homemade cornmeal is a natural order of the day in the cornbelt. Cornmeal without the germ removed has about the same analysis as wheat flour, excepting that the meal is richer in oil. Of course it will not keep so long as the special-process cornmeal that is mainly starch. Old-fashoined meal must be used fresh, and

then it is superior in flavour to commercial meal. Now that whe flour costs 8 to 9 cents a pound and cornmeal 4 to 5 cents, there real economy in using the meal.

By making the cornmeal in the home mill one gets it for pra tically the price of corn. For the sake of general economy it seen wise to urge the use of such cornmeal in one form or another in eac day's menu. One of the local physicians has taken a hand in tl agitation.

Americans might with profit eat cornbread or cornmeal mu at one or two meals every day, and eat wheat bread at only one two meals a day. This would ease the pressure on wheat nnd flo and it would not affect the corn market or its supply very seriousl We grow 4 to 5 times as much corn as wheat and scarcely one-tent of the corn has been going for meal and other human food product We do not yet face the necessity of living on corn, but we might jus as well begin on it since health and economy will result."

:o:

RICE.—The article on rice beginning on page 261 is worthy c careful perusal. It shows how composite the rice grain is—not qui so much as wheat, but not just the simple grain that appears on mo tables deprived of some of valuable parts. Rice is vey largely use here with fish, flesh and fowl along with or in place of yams, potatoe etc., and in this way only brown rice should be used. Polished whi rice is useful for the puddings or dessert. Next month we sha give a chemical analysis of Rice Bran which has lately been muc used for the feeding of horses, cows and fowls, and has proved econ mical and efficient as an emergency food where imported wheat br and middlings and local corn were very high priced.

:o:

LEAF BITTEN DISEASES OF COCONUTS.—The article on th subject by the Government Microbiologist brings the knowledge what are new diseases of coconuts up to date. A great deal more course will yet be known regarding these diseases and their treatmen as time goes on.

:o:

CORN.—The best planting season for corn in the lowlands between August 15th and September 15th; in the cooler parts tl spring crop gives best returns, but it is necessary for every one wl has land available to plant this year, to keep up the very satisfacto supply of corn grown through the summer months. In these da sustained efforts in food production are absolutely necessary. W only wish that it would be made possible to so regulate distribution to prevent a glut in any particular market at any one time. It storage room that prevents this at present with all crops, but mo particularly with corn.

Preparation for planting corn should be going on during Jul so that the land will be ready for the showers which usually come in tl middle of August and planting, should be done as promptly as po sible after the rain. It is a bad habit and not good policy wait until rains are actually falling and then begin to prepare lan Prepare early when the weather is dry so that work can go on regular and satisfactorily. Take the greatest care in the selection of see if you cannot get any from your own or your neighbour's field th is satisfactory to you, send to this office.

PIGS.—Food stuffs are gradually getting more plentiful and soon there will again be odds and ends of various crops about the household on which pigs can be fed economically. Green bananas have been the most common food for pigs in the Island wherever bananas were grown plentifully. When bananas are scarce, pigs become scarce.

Those who have brood sows should look after them well. Do not keep a dirty pen, clean the pens regularly and put in a fresh supply of dry bedding every day. Keep one corner of the pen covered over for shade and shelter and give plenty of water. Where pigs run free these remarks are not applicable. The brood sows should then be called up every day and given a little hand feeding to tame them in case they need handling at any time.

—:o:—

GUINEA CORN.—We have seed in stock and planting is done at the same time as country corn—the earlier in August, the better. This is a grand crop for dry districts and gives far more green forage per acre than country corn as it grows up again. We have had guinea corn grazed down by cattle 6 times, yet it grew up again and produced small heads.

—:o:—

IRISH POTATOES.—Irish potatoes may be planted again in the hill in the middle of August to keep up a supply. The return is usually not very good, but should pay this year on account of the high price of other foods. Irish potatoes have been selling in Kingston much cheaper than yams this year, not that potatoes are very high priced but yams are. It seems that people will have yams at any cost whatever. The usual lack of co-operation among growers is unfortunately in evidence this year. This (potatoes) is one of the crops the growing of which is mostly confined to one or two districts, so that co-operation in the distribution would have been easily done.

Those who want seed potatoes for planting in the beginning of November should let us know at once.

—:o:—

SUGAR CANE.—Very valuable experiments are being carried through under the auspices of the Trinidad Board of Agriculture. We have quoted results from cocoa and coconut experiments at various times. In 1914 experiments were carried out with 10 different varieties of sugar cane planted on light and heavy soils, planted 5 x 3, single plants, and planting in the fall only, each plot not less than half an acre but preferably an acre. The planting was done between September and October on light and heavy soils; on the light soils none of the varieties ripened before the end of February, while on the heavy soils none of the canes ripened before the beginning of April. The best return from the canes, was 37.18 tons, the poorest 18.39 tons. The light soils gave better results than the heavy soils. These were ordinary field experiments. From 10 to 12 tons of pen manure were applied, together with 2 cwt. of Sulphate of Ammonia and 1 cwt. Superphosphate of Lime, all at that rate per acre.

At the St. Augustine Experiment Station, where the soil was a light loam, pen manure at the rate of 15 tons per acre was applied. The cane was planted from August to December. The highest yield was at the rate of 61.29 tons of cane, the lowest 17.7.

CASSAVA.—Experiments in the cultivation of cassava have been continued in Trinidad since May 1915, with the object of ascertaining—(1) the best local varieties; (2) the best planting distances; (3) the best part of the sticks for planting; (4) the best method of planting, i.e., on the flat, on banks, or in forked holes; (5) suitability of planting with other crops.

The plants were reaped when about 15 months old. Eleven varieties were planted. The best average results were got where planting was 3 x 3 than over any other distance. A distinctly better return was secured from the centre plants of the cassava sticks rather than the tops and the bottoms. The best nett results were obtained by planting on the flat. Planting among other crops was a failure.

———:o:———

RICE.—In Trinidad decided efforts are being made to popularize and extend the growing of rice. The present crop of unhusked rice is calculated at the rate of 40,000 bags of 160 lbs. each, grown on some 5,000 acres. Prize Competitions are to be held for the best plot of not under half an acre. Improved varieties of rice seed are also being imported.

———:o:———

EGG LAYING.—In the Laying Competition in New South Wales where single pen records were kept, a Black Orpington hen finished by breaking all previous world records of 289 eggs for a pure-bred hen and 303 eggs for a mixed breed (quarter Plymouth and three-quarter White Leghorn belonging to the Oregon Agricultural College, U.S.A.) by laying 312 eggs in the 12 months and it was followed closely by a White Leghorn hen with 308 eggs.

The general average of competing pullets was 205.8 and of ten year old hens 165.

A pen of Black Orpingtons won first for the heavy breeds with an average of 246 eggs. A pen of White Leghorns won for the light breeds with an average of 254 eggs. These were the best averages yet attained in any laying competition.

These hens have certainly done their duty but the people responsible for them did not expect something for nothing, but fed them liberally, regularly, and judiciously, and gave them pluck to start to work.

———:o:———

INDUSTRIES.—We have all along been pegging at it that what Jamaica needs are industries which will work into and be an issue of the greatest industry—agriculture. There are other industries which cannot connect with agriculture but which yet are suitable for and needful to the country. We are glad to see that there is now some awakening in this respect.

We mention a few industries closely allied with agriculture. First there is the manufacture of leather from hides and skins and the making of boots and shoes in factories; hundreds of men not physically fit for agricultural work could then be employed. We import £96,000 of boots and shoes so that there is a large amount for a local factory or factories to cut into.

There is the manufacture of soap from coconut, castor seed and cotton seed; we should then also have coconut meal and cotton seed meal to feed stock, and castor pomace to manure the soil. We import £65,793 worth of common soap so that there is here also a substantial amount for local industries to work on.

ROCK SALT.—We are surprised to find how few persons give salt to their stock. Rock Salt should be before all horse and cattle stock.

In 1916 we only imported £130 of rock salt, so with some fifty thousand head of horse stock and one hundred thousand head of cattle in the Island, there is proof that practically our stock get along without salt except the natural organic salts in their food.

—:o:—

BRANCH NOTES.

MAHOE HILL (Clarendon.)—The annual meeting of this Branch was held on the 4th June. The President, Treasurer, twelve members and the Secretary were present. Minutes of last meeting were read and confirmed. Correspondence read. The payments of subscriptions before the end of the month was dealt with by the Secretary. Authorized Persons gave satisfactory reports, but asked that the Parent Society be informed of the various disturbances encountered by them in the performance of their duty. The election of officers resulted in the re-election of all the officers who served in the past year.

C. J. ROBOTHAM, Secretary.

HANOVER (Lucea.)—The second quarterly meeting of this Branch was held at the Court House, Lucea, on Saturday, May 12, when the following were present:—Rev. B. C. Lumsden (Chairman), Rev. D. A. Rothnie, Messrs. Webster, Clare, Crooks, Taylor, Somerville and Lloyd. Correspondence from the Parent Society, Mr. J. Charley and the Spalding Branch was dealt with. Messrs. Crooks, Clare and Webster gave some account of their work and difficulties as Authorized Persons. Mr. Walter Taylor brought down yam heads which had been mutilated by thieves, and pointed out that the vine had also been destroyed. He had lost 69 hills of yams recently and over 200 others had been opened up by thieves. It was remarked that the Government were about to deal with the question of praedial larceny at a special meeting of the Council. The election of officers and committee for the ensuing year resulted as follows: Hon. Presidents, Hons. G. A. Sanftleben and C. W. Hewitt; President, Dr. A. J. Salmon; Vice-Presidents, Rev. B. C. Lumsden, Rev. D. A. Rothnie, Mr. D. A. Webster; Secretary and Treasurer, Mr. T. J. Lloyd; Committee: Mrs. C. M. Lake, Rev. T. Redpath; Messrs. A. M. Davis, B. R. Clare, C. J. M. Smith, C. J. Browne, E. G. Cooper, J. E. Jackson, G. Shaw, Walter Hogg, W. G. Taylor, Gordon Dewar, T. F. Hill, B. Crooks, Jas. Grant. It was decided to hold a food show on August 1st and the above were appointed to form the show committee. The committee will meet on Saturday, May 19th, to arrange details of the show.

T. J. LLOYD, Secretary.

PORTLAND (Central.)—The annual meeting of the Central Portland Branch of the Agricultural Society was held in the St. Margaret's Bay Schoolroom on Saturday, the 27th May. Present: Rev. P. A. Conahan (President); Mr. J. S. Williams (second Vice-President); Rev. J. E. Reid; Messrs. E. A. Gunter (Agricultural Instructor) J. D. Brown, C. M. Harris and several other members. The President spoke on the utilisation of all the holding and definite improvement of it from year to year. He referred to the lack of industry on the part of the peasantry, and he thought that representation should be made to those directing the agricultural affairs of the Island.. The Rev. J. E. Reid moved and Mr. J. S. Williams seconded, and it was unanimously agreed that a small committee be appointed to go into the matter of the management of holdings with a view that Agricultural Instructors be put in a position to give more effective help to the people in their several districts and make representations if necessary as to why those who have failed to improve their lands have not been able to do more. The following Committee was appointed: Rev. P. A. Conahan (Chairman), Rev. J. E. Reid, Messrs. J. S. Williams, Albert Roper, J. S. Morris and J. R. McGaw—three to form a quorum. The Secretary presented his report Fourteen meetings were held; the membership had slightly increased during the year; the funds of the Society were in a fairly healthy condition; there was a movement to get a corn mill and the grind stone was serving a useful purpose. The branch had pleasure in recording that through the efforts put forth chiefly through the President, there was a special rate to shippers of ground provision. The election of officers for 1917-18 then took place:—Rev. P. A. Conahan was re-elected President; Rev. J. E. Reid (first Vice-President); O. L. M. Sanguinetti, Esq., (second Vice-President); J. S. Williams, Esq. (Treasurer); L. Morgan (Secretary). In addition to these, Messrs. J. Napier, J. O. Thompson, J. D. Brown, A. Roper and J. S. Morris

were elected Managing Committee. Mr. Gunter spoke of the necessity of planting all we can, and dealt fully with steps that were being taken to acquire lands for cultivation by the peasantry. There was a long discussion on the subject, and all were agreed that there were sufficient lands in these parts, that the government lands were not far off, only roads were needed to reach them with some degree of ease. *It was agreed that the Committee appointed to deal with the improvement of holdings* be asked to prepare a letter to the Governor pointing out the necessity of starting the proposed new road. It was proposed to ask the Secretary of the Parent Society what is to be done in case of an Authorized Person who is in doubt as regards his taking up a man who refuses to give any statement. The accused is taken before a Justice of the Peace who does not see the way to commit the accused. This Authorized Person loses two days in endeavouring to secure a conviction.

L. J. MORGAN, Secretary.

WAKEFIELD (Trelawny.)—The regular monthly meeting of this Branch was held here on the 5th June. There were present Mr. M. Rennie, Instructor; the President, Secretary, all the other officers, 22 members and a number of visitors. Three new members were duly elected. A very interesting address on "Corn-growing" was delivered by the Instructor. He entered into details and advised the planters to aim at the maximum yield and not to be content with the mere minimum; to manure the land thus increasing its fertility and not burn, as burning destroys humus; to fork holes thoroughly and not give mere hoe chops; to plant the best seeds from the largest ears and not the smallest seeds from the little ears. A peculiar potato disease was next dealt with; the Instructor asked that samples be sent him and he would forward same to the Microbiologist for inspection. The Vice-President, Mr. Hull, moved that at next meeing each member should endeavour to bring in a new member, thus increasing the membership and the consequent importance of the Society.

S. E. PATTERSON, Secretary.

DUNCANS (Trelawny.)—The usual monthly meeting of the Duncans Branch met on the 27th ult. The Rev. D. D. Parnther, B.A., in the Chair. Letters were read from (a) Colonial Secretary's Office *re* Resolution on Praedial Larceny; (b) Secretary Parent Society *re* Authorized Persons. Half Yearly meeting and lands for cultivation. Mr. Rennie, Asst. Instructor, offered prizes (kindly subscribed by some of the gentry) of £2 2s. down to 5/- for the best returns from a plot 33ft. sq. of seedling potatoes.

L. L. LOCKE, Secretary.

JACKSON TOWN (Trelawny.)—Tbe regular meeting of the Branch was held on the 18th June. Present: Messrs. M. L. Walters, Vice-President, presiding; Andrew Ferguson, Treasurer; Martin Rennie, Instructor; C. T. Saunders, Secretary and 21 regular members. Resolution expressive of the necessity for suitable lands was adopted. It was decided, to send no delegate to the General Half-Yearly meeting this year. Mr. Rennie promised to do justice to the interests of the Branch at that meeting. The Sawyers Branch wrote expressing their willingness to become a sub-Branch of our Branch. The following Authorized Persons were appointed subject to the approval of the Parent Society:—1. Charles Lawrence, Liberty Hall and First Hill; 2. Prince White, Jackson Town; 3. Charles Grant, Hampshire Hill; 4. Theophilus Gordon, Content. The Instructor exhorted the members to continue their agricultural activity without slackening. As an incentive in this direction, he informed them of his intention to hold an "Irish Potato Competition" for the Parish. He was already in correspondence with some of the influential gentlemen of the parish with the object of soliciting funds for the distribution of prizes. For his valuable help and suggestions, the Instructor was accorded warm expressions of thanks.

C. T. SAUNDERS, Secretary.

MT. INDUSTRY (St. Catherine.)—The monthly meeting of the Mt. Industry Branch Agricultural Society came off on the 21st June. Mr. T. E. Lawrence, V.P., presided, about 12 other members and the Instructor, Mr. A. P. Hanson, were present. There is a great need for Cassava sticks here, and the Secretary was directed to make enquiry where and how these can be procured. The Praedial Larceny question was dealt with and many suggestions similar to those appearing from time to time in the press were made how to deal with this. This Society is anxiously waiting to see what the Government is going to do to mitigate the evil. An abundant crop is expected in corn coffee, potatoes, and in spite of the thieves the people are planting to meet the expected shortage of food. Mr. Hanson addressed the meeting. The Secretary was elected delegate to the Half Yearly Meeting of the Jamaica Agricultural Society in July.

R. SIMEON ANGLIN, Secretary.

ST. JOHN'S (St. Catherine.)—A regular meeting was held on the 21st June at 7 p.m. Ten members and the Secretary were present and a large number of visitors. Messrs. William Green and Joseph Willis were recommended as fit persons to become Authorized Persons for Paul Mountain District. Mr. Banton was elected delegate to the next Half Yearly meeting. The findings of the Special Committee, who dealt with the circular from the Parent Society were laid on the table. These were unanimously approved of and adopted. The meeting agreed that one of the chief setbacks here is the lack of suitable lands for cultivation. A discussion took place on Praedial Larceny. The Secretary said the meeting should endeavour to find out the cause or causes and then suggest the remedies. Many were the opinions. Some advocated drastic measures. After much deliberation, the following were regarded as the chief causes:—1. Ignorance which can be removed by education. 2. Low wages which can be removed by better wages. 3. Poverty which is due to ignorance and idleness. 4. Heredity since like begets like. 5. Non-complusion of Parents to support their children. S. A. BANTON, Secretary.

REDWOOD (St. Catherine.)—The regular monthly meeting of the Redwood Branch of the Agricultural Society was held on 26th June, 1917. There was a large attendance. Mr. Simeon Green was recommended to be an Authorized Person for the Cheesefield District, and Mr. Egbert Burke for the March Street District. Mr. H. A. Fulle , Authorized Person for Dover Castle, gave report of the performance of his duty as follows: He made four arrests for the year, he had four convictions. But he was not satisfactorily remunerated as he had sometimes to expend more than he received as pay and he had to lose much time in trying to detect matters for which he got nothing; he therefore thought of resigning if nothing better could be done. Mr. Thomas Lewis applied to the Society if any steps could be taken by the Authorities to impede the dreadful pollution of the main and parochial roads of this district which is so prevelant that it sickens any foot traveller. After a full description, the President made it plain that this was great violation of the law, and the law was very severe on these acts, and that any one reporting such case would be amply rewarded and the culprit severely dealt with. The meeting expressed its deep regret at the departure of its esteemed President, Mr. W. F. Bailey.

A. D. THOMPSON, Secretary.

SANTA CRUZ (St. Elizabeth.)—At the June meeting of the Santa Cruz Agricultural Branch there were present: The Instructor, Mr. T. W. Darien, V.P., in the Chair, nine other members, a couple of visitors, and the Secretary. The Instructor intimated that Authorized Persons made no arrest in the parish for the last quarter, and asked for explanation. It was pointed out that praedial larceny is on the decrease in the district. Authorized Person D. Dunkley reported that he made an arrest on the 21st April, and took his prisoner to the Lacovia Police Station first and then to the J.P. a short time after. The J.P. admonished and dismissed the prisoner. He was advised to follow the law in future, and take his prisoners, direct to the J.P. or Clerk of Courts and not to the Police Station. That the Hon. H. W. Griffiths, M.L.C., be asked to allow himself to be nominated a member of the Board of Management of the J. A. S. That the sending of a delegate to the next Half-yearly General Meeting be deferred. That a general Public Meeting be held on Friday, 22nd, at 4 p.m., to discuss the question of the getting of lands to cultivate food stuffs. That the Secertary finds out the price of the Ram Goat recommended by the General Secretary; That the Branch co-operate with the Nain Branch at its show on 1st January, 1918. That this Branch holds a Local Show on the 9th November on the Government School premises, obtain a driving road from the owner of Ashwood, and solicit the co-operation of the neighbouring Branches. A Show Committee was formed to consist of the officers, Messrs. C. F. White, J. Cook and J. G. Facey with power to add to their number. The Instructor advised the preservation of cassava sticks and suggested that whole sticks be replaced in the ground at the time of gathering the tubers and portions can be taken off for planting when required. This closed the evening's proceedings.

S. AUG. BLYTHE, Secretary.

KILANCHOLLY BRANCH (St. Mary.)—Regular monthly meeting June 2nd. Minutes read and confirmed. Present, Chairman, Vice-Chairman, Treasurer and Secretary; Instructor. Ten members and one visitor. The Secretary instructed to to express the thanks of the Branch to the Parochial Board of St. Mary for the improvements carried out by them on the spring and road at Kilancholly suggested by the Branch. Secretary instructed to inform Parent Society that the people of this district suffer from lack of suitable land for cultivation. Mr. Howell deplored the lack of interest on the part of the people in this district in the work of the Branch. The President moved a vote of thanks to the Secretary for his energetic efforts to

get the Kilancholly spring and road looked after. Authorized Persons' reported: T. Howell, no arrest. James Bowen three arrests, three convictions. Authorized Person Bowen reported that he had difficulty in getting his draft cashed. Resolved that the Parent Society be asked to arrange that these be negotiable at all Post Offices. James Pollock elected a member and nominated as an Authorized Person. Thomas Beckford and Thomas Thaw nominated Authorized Persons. The Secretary was instructed to forward affiliation fee and list of members for the ensuing year to the Secretary Parent Society as early as possible. The Instructor explained the opinions of the various Branches regarding Praedial larceny. A. G. HUFFSTEAD, Secretary.

CASTLETON BRANCH (St. Mary.)—Regular monthly meeting June 13th, R Robertson, President; a large number of members with the Agricultural Instructor and Secretary present. Resolved that quite enough lands are available for cultivation in this district. Mr. S. C. Pickersgill elected as Delegate for this Branch at the Half-Yearly Meeting. Resolved to nominate Sir John Pringle, Hon. R. P. Simmonds, Rev. W. T. Graham and Mr. L. B. Melville, White Hall, Albany, as members of the Board of Management for the Parent Society for the ensuing term. Communication from the Broadgate Branch inviting the Hon. R. P. Simmonds to attend a meeting of the Branch Society at Annotto Bay to consider the question of Praedial Larceny was read and considered. Members complained that they suffered great inconvenience as vendors of foodstuffs in having to travel to Annotto Bay and suggested that the Medical Officer of Health visit local centres in the same way that they do for vaccinatio purposes. A. PICKERSGILL, Secretary.

TRYALL HILL BRANCH (St. Mary.)—Regular monthly Meeting 18th June. Present: Mrs. M. Hird, V.P., in the Chair; ten members, Instructor, the Secretary, and many visitors. Minutes of last Meeting read and confirmed. Ten members paid 6d. towards their fees. The Instructor pointed out that until the full fee was paid the Parent Society did not consider them members. The Secretary reported affiliation fee paid. The Instructor asked for list of Authorized Persons. The Secretary instructed to prepare this for next Meeting and record it in the Minute Book in such a way that a monthly record of the attendance of the Authorized Persons may be kept. Resolved that Authorized Persons not reporting on their work at the meetings of the Branch for three consecutive meetings be recommended for dismissal. Communications from the Broadgate Branch *re* causes and remedies for praedial larceny read and considered. The Branch resolved that owing to lack of funds a delegate could not be sent to the Half-Yearly Meeting. Appointment of officers at next Meeting. A. A. CONSTABLE, Secretary.

TRYALL HILL BRANCH (St. Mary.)—Special Meeting, June 11th. Present, nine members, the Secretary, and a large number of visitors. This meeting was called as a Special Meeting to consider the question to invite the Hon. R. P. Simmonds to meet the Branches in this district at Annotto Bay to consider praedial larceny, and to deal with the Circular from the Secretary of the Parent Society regarding the question of land for the cultivation of foodstuffs. A. A. CONSTABLE, Secretary.

MAHOE HILL BRANCH (St. Mary.)—Regular monthly meeting June 27th Present: 32 members, 5 visitors, the Instructor and the Secretary. H. C. Walker, V.P., in the Chair. The Instructor explained in detail the method of making and using sweet potato meal. Read Circulars from Secretary of Parent Society *re* Half Yearly Meeting and election of the Board of Management. Rev. W. E. Evelyn, appointed Delegate of Branch to Half Yearly Meeting. The delegate was instructed to vote in favour of flogging praedial thieves if the matter was discussed at the Half Yearly Meeting. W. A. SIBBLIES, Secretary.

MARLBOROUGH BRANCH (St. Mary.)—Regular monthly meeting June 14th. Present: Z. French, President, in the Chair; J. A. Dison, V.P.; 13 members, two visitors and the Secretary. Minutes of last meeting read and confirmed. New members elected: E. Foster, A. Johnson, M. Nugent. Authorized Persons reported as follows:—C. Thomas, two arrests, two convictions. A. D. McFarlane, two arrests, two convictions. T. Pedley, two arrests, two convictions. J. Brown, 4 arrests, 4 dischrged. Messrs. Gillies and Scott, no arrests. The following were nominated for appointment as Authorized Persons: J. A. Dixon, M. Nugent, A. Johnson, and D. Derry. Read and dealt with letters from Secretary of Parent Society.

R. S. FINLAYSON, Secretary.

MT. REGALE BRANCH (St. Mary.)—Regular monthly meeting, Friday, 1st June. Mr. Francis White, V.C., in the Chair. Mr. Laban Johnson became a

pany is being formed, however, for the purchase of one. Authorized Persons reported all well. Praedial larceny is rampant. V. C. Mattocks explained to the Authorized Persons the nature of their duty. Resolved that Authorized Person Francis Morgan be recommended for dismissal. The Branch agrees that drastic measures are necessary for the suppression of Praedial larceny. Resolved that there is no necessity for the Government to furnish land for the planting of foodstuffs in this district. Joseph Danvers, William McFarquhar, Laban Johnson, George A. Lee recommended for appointment as Authorized Persons. Grindstone Committee recommended that it be sold for 1/-. Secretary reported that accounts for Parent Society for corn and affiliation had been paid. B. T. ATKINSON, Secretary.

EPSOM BRANCH (St. Mary.)—Regular monthly meeting Wednesday, June 6th, at 8.30. Present, 42 members, some visitors. Rev. E. J. Touzalin President, in the Chair and the Instructor. Minutes of last meeting read and confirmed. Letter from Broadgate Branch *re* Praedial Larceny, recommendations approved and co operation promised. Condition of the Reddington Road was discussed and a Committee appointed to inspect it and report at next meeting. Resolved that the Secretary be the delegate to the Half Yearly Meetig of the Parent Society.

D. S. LALOR, Scretary.

ROCK RIVER (St. Mary.)—Regular monthly meeting June 15th. Present, 20 members and some visitors. Minutes of last meeting read and confirmed. The officers for the ensuing year were elected as follows: President, E. E. Campbell; 1st V.P., R. H. Wellington; 2nd V.P., R. Glover; Treasurer, T. Roulston; Secretary, H. Livingstone; Asst. Secretary, P. J. Livingstone. D. Clunis E. Johnson and I. Thomas nominated as Authorized Persons. Resolved to purchase tools for pruning cocoa, and a grindstone for the use of the Branch. Next meeting, July 20th.

D. LIVINGSTONE, Secretary.

WALLINGFORD (St. Mary.)—Regular monthly meeting June 18th. President C. S. Brown, presiding. Present, 25 members. Minutes last meeting read and confirmed. Resolved that this meeting approve of the suggestion that the Government take over blocks of land from proprietors and rent same to tenants at reasonable rates. Authorized Persons reported as follows: Simon Taylor, one arrest, one conviction; John Gardner, one arrest, awaiting trial. Resolved that A. N. Hornis be delegate to this Branch at Half Yearly Meeting. Resolved that Mr. John Sinclair be asked to continue to be President of the Society. Resolved that the Government be asked to compel all shopkeepers to use double dial scales. Next meeting, July 17th. (Miss) M. J. MORGAN, Secretary.

MORAVIA (Clarendon.)—Meeting was held on June 14th. There were present: 23 members, a few visitors and the Instructor. The obtaining of lands for cultivation and a resolution from the Spaldings Branch were discussed. A resolution *re* the impassable condition of the fording of the Cane River was sent the Public Works Department. The Instructor addressed the meeting on the mistakes he had noticed while visiting the fields during the week. The officers for the year are: L. R. Flemming, Esq., President; Rev. W. R. Morris, Vice-President, and J. N. Simpson, Esq., Secretary and Treasurer. J. N. SIMPSON, Secretary.

MOCHO AND BRIXTON HILL (Clarendon.)—The monthly meeting was held on June 7th. After the usual preliminaries, the great question for the district was discussed, namely, the obtaining of lands for planting foodstuffs. The unanimous feeling was that land was required and that Dawkins Mocho, which was formerly rented to the people, should be taken over by the Government. It was decided to call a public meeting to deal with the matter. Mr. Barnes was appointed delegate to the Half Yearly General Meeting. S. A. FRANCIS, Secretary.

RED HILLS (Clarendon.)—This Branch held its meeting on June 5th. The weather was bad and the attendance poor. The land matter was discussed and also the condition of the Moss Hill road. The Treasurer presented his report showing a balance of 9/6 up to 31st March. The Instructor, who had been in the fields in the day, spoke on the coming May Pen Show. J. WATTS, Secretary.

FRANKFIELD (Clarendon.)—The meeting came off on May 25th, fourteen members being present, also the Instructor. Mr. McKay presided. Authorized Persons gave their reports and were given advice by the Instructor. The planting of foodstuffs, the getting of a corn mill, the need of a J.P. for Frankfield, and damage valuation, were discussed. Mr. McKay was appointed delegate to the Half Yearly meeting.

[illegible]

IN THE PRESS !

(And will be Published Next Month)

A Banana Quick Calculator

—WITH—

RAILAGE AND WHARFAGE RATES
ON BANANAS.

65 Pages of Figures !

Saves Time, Saves Worry, Saves Brain, Saves Money.

Are you alive to what this means to YOU Banana Men?

A SINGLE WORD to the point is better than a Speech.

If you hope to do real swift and accurate work in Banana figuring AS YOU SHOULD DESIRE, we urge that you understand the features of this New READY-RECKONER. Nobody from the Banana Grower through all the Runners, Purchasing Agents, Office Clerks, up to the Managers of the Fruit Companies can afford to be without a copy.

Price only 5s., Post Free 5s. 4d.

TO ADVERTISERS: The BANANA CALCULATOR is a Standard Work and undoubtedly the finest medium for advertising ever offered to the Jamaica public—because its constant use in the Banana Trade brings Advertisers prominently before a large section of the purchasing public.

ADVERTISEMENTS SOLICITED. Still a few pages open to Advertisers. Don't miss this golden opportunity. Send in your Advertisement to-day to

Mortimer C. DeSouza & Co.,

THE PRINTERS AND PUBLISHERS,

139-145 Harbour Street, Kingston.